DOCUMENT RESUME

ED 062 475 UD 012 341

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TITLE The Effectiveness of Compensatory Education: Summary and Review of the Evidence.
INSTITUTION Office of Program Planning and Evaluation (DHEW/OE), Washington, D.C.
PUB DATE 20 Apr 72
NOTE 195p.

EDRS PRICE MF-$0.65 HC-$6.58
DESCRIPTORS *Academic Achievement; Academic Performance; Achievement Rating; Bus Transportation; Civil Rights; *Compensatory Education; Cultural Enrichment; *Educationally Disadvantaged; Equal Education; Equalization Aid; Learning Difficulties; *Learning Motivation; Learning Readiness; Nondiscriminatory Education; School Readiness Tests; School Segregation; Social Integration; Underachievers; Universal Education

ABSTRACT

Concerning The Equal Educational Opportunities Act of 1972, there is new Federal emphasis on compensatory education to help disadvantaged children. This report takes the position that compensatory education can be made to work, and that the application of concentrated compensatory resources (usually at higher dollar costs) in basic learning programs enhances the probability of success in compensatory education. To substantiate this claim, this report investigates whether one may conclude from existing compensatory education programs that reasonable numbers of disadvantaged children in these programs have learned more effectively. To this end, compensatory education programs in various States across the country are evaluated in light of State reports and large scale evaluations of several cities. The programs are evaluated in terms of educational resources, achievement gains, program strategy implications. ["The urgent need for experimentation," by John P. Gilbert and Frederick Mosteller," reprinted from "On equality of educational opportunity," edited by Daniel P. Moynihan and Frederick Mosteller, and comprising "Appendix U of this document, has been deleted from this document.] (Authors/SB)

ED 062475

The Effectiveness of Compensatory Education

Summary and Review Of the Evidence

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
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FOREWORD

Within the Department of Health, Education and Welfare, my office has the responsibility for assessing the effectiveness of all major programs. The evidence on compensatory education has been a subject of paramount interest to this office for some years. We know that there are millions of children who need help --we have sought systematically to learn how to help them.

The debate concerning the effectiveness of compensatory education has been long and intense. The President's initiative of March 1972 has brought about renewed public debate on the subject. This analysis and review of the evidence concerning the effectiveness of compensatory education has been done in order to provide a basis for a more informed and complete discussion of a complex issue. This work has been done under severe time pressures, and is subject to those limitations.

The Project Monitor for this effort was Dr. Constantine Menges, Assistant Director (Planning) of the Office for Civil Rights. Colleagues with him in this effort have been Dr. Joan Bissell, Office of the Assistant Secretary for Planning and Evaluation; Dr. John Evans, Assistant Commissioner for Planning and Evaluation, Office of Education; Ms. Linda McCorkle, Office for Civil Rights; Ms. Ruth McVay, Office for Civil Rights; and Mr. P. Michael Timpane, Director of Education Planning, Office of the Assistant Secretary for Planning and Evaluation. This work could not have been completed in the short time available without the efficient and cheerful secretarial support of Ms. Penny Al-Rawi and Ms. Belinda Hood.

Laurence Lynn

Laurence E. Lynn, Jr.
Assistant Secretary for
Planning and Evaluation

20 APR 1972

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ANALYSIS OF COMPENSATORY EDUCATION

THE EFFECTIVENESS OF COMPENSATORY EDUCATION
SUMMARY AND REVIEW OF THE EVIDENCE

INTRODUCTION

In his message to Congress concerning the Equal Educational Opportunities Act of 1972 President Nixon proposed a new Federal emphasis on compensatory education to help disadvantaged children. The President proposed that this effort be focused on basic learning skills at relatively high dollar levels (about $300 per child), to result in improved academic achievement for students in schools with high concentrations of poor children.

In forwarding his program, the President acknowledged that the steps he proposed represented one judgment--carefully considered but a judgment nevertheless--in an area where empirical evidence concerning the probabilities and determinants of success or failure was imperfect. As his message stated:

> "For some years now, there has been a running debate about the effectiveness of added spending for programs of compensatory or remedial education. Some have maintained there is virtually no correlation between dollar input and learning output; others have maintained there is a direct correlation; experience has been mixed."

Based on careful assessment of available evidence, the President's judgment was also clearly stated:

> "While there is a great deal yet to be learned about the design of successful compensatory programs, the experience so far does point in one crucial direction: to the importance of providing sufficiently concentrated funding to establish the educational equivalent of a 'critical mass,' or threshold level. Where funds have been spread too thinly, they have been wasted or dissipated with little to show for their expenditure. Where they have been concentrated, the results have been frequently encouraging and sometimes dramatic."

The President's proposals involve, therefore, an affirmative answer to the following two questions:

. Can compensatory education be made to work?

. Does the application of concentrated compensatory resources (usually at higher dollar costs) in basic learning programs enhance the probability of success in compensatory education?

This analysis is intended to amplify in additional detail our affirmative replies to these questions and set forth some honest and prudent qualifications which should be attached to these "yes" answers. Secretary Richardson testified at length before the Congress on this subject on March 24 and 27. But we feel that an additional review of the evidence is needed at this time, because the debate on the President's proposals for a new compensatory education effort has been fragmentary and incomplete.

With respect to both questions, we have been speaking in terms of probabilities. We do not find in the evidence any sure-fire techniques whereby compensatory education will always work. Similarly, the relationship between the intensity of resources (i.e., costs) and achievement results means only that a "critical mass" may increase the probability of success. There is no guarantee of success if more funds are spent; and very expensive programs have, in fact, failed. More than resources are necessary for a good compensatory education program; careful innovative planning and effective management are also essential. At the same time, we know that unusual combinations of circumstance and imagination have and no doubt will produce successful compensatory education with relatively small per pupil costs.

All this we have said before. But it obviously merits repeating at each stage of the public discussion of these issues.

In reviewing the evidence that follows, it is also important to maintain a perspective concerning the maximum contribution which we expect schools to make in lifting the burden of children's economic and cultural deprivation. Differing perspectives on this point are among the most important factors contributing to the divergent conclusions which reasonable men have reached in reviewing the evidence. Some would hold that schools can do little or nothing to overcome a poor child's personal history and environment, while others would hold that schools can overcome almost all obstacles to learning for all children. Our assumption is that if schools can produce improvements in learning for disadvantaged children of even a relatively modest order, this both constitutes success when weighed against the formidable challenge to the schools which these other conditions present and warrants further support and exploration.

The difficult question for national policy, then, is whether the net weight of the evidence allows us to conclude that compensatory education programs can be made to help reasonable numbers of disadvantaged children to learn more effectively. The level of one's expectations for success are presently a part of any individual's answer to this question--as much as or more than the weight of the evidence summarized below.

PROFILE OF AVAILABLE EVIDENCE

We have tried to gather and analyze all the evaluations of compensatory education efforts in reading and mathematics which included pre-treatment and post-treatment standardized achievement test data. Our survey of the sources has been complete to the limits of our knowledge and time, and this report includes all the evidence, positive and negative, available to the Department. There are, no doubt, flaws in some degree or other in most of the pieces of evidence we have considered.

This evidence can be divided into two categories: large-scale evaluations which include considerable numbers of children from a wide variety of settings--notably, the national, State and city evaluations of programs under Title I of the Elementary and Secondary Education Act of 1965; and situational evidence which is limited to specific projects, schools or smaller research studies.

No one piece of evidence is either sufficiently representative of national compensatory education programs or sufficiently definitive in its findings for policymakers to make conclusions based upon it alone. Rather, arraying the evidence available is more like fitting together the pieces of a mosaic and considering the overall pattern that emerges. 1/

CAN COMPENSATORY EDUCATION BE MADE TO WORK?

The appendices of this analysis constitute our review of the best national, State and local evidence that we could find. As presented, these reviews set forth with appropriate qualifying commentary the evidence which has led us to conclude that the concentrated compensatory education program proposed by the President is a sound investment for the Nation at this time. It is in the nature of the evidence we review that unequivocal findings, negative and positive, are equally rare.

Evidence for the effectiveness of compensatory education

The evidence presented in the appendices covers more than 16 large-scale evaluations performed by Federal, State and local authorities concerning their compensatory education programs. It also reviews available evidence concerning specific projects where compensatory education succeeds, preliminary results from the evaluation of the national Follow Through Program and less comprehensive State evaluations.

The studies covered are not of equal importance in terms of their representativeness, thoroughness, comprehensiveness, or presumed validity. Nevertheless, the drift of the evidence seems to be unmistakable; that compensatory education often enhances the achievement of poor children.

1/ A more extended discussion of the evidence will be found in the section on "Introduction to The Evidence."

Expert experience suggests that .7 grade equivalent per year is usually the most which disadvantaged children gain in one year of school. But in many of the compensatory education programs we discuss, sizabi proportions (often a majority) of the poor children tested seem to be achieving at a greater rate than this; while a smaller but still significant percentage are achieving at or above the national norm (1.0 grade equivalent gain per year).

The most complete data are those available from the State of California.[1/] California has collected pre-treatment and post-treatment standardized test achievement data on children receiving Title I services for the last four years. Achievement data was collected for about 80% of all participants in compensatory reading programs and analyses were conducted using data covering about 50% of the participating children. Only that achievement data which met specified quality control criteria was included. Over the four years covered by the data, 54% to 67% of children receiving compensatory services showed a rate of reading achievement gain larger than the usual maximum for disadvantaged children. Analysis and results for mathematics were similar and even slightly better. We judge this to be clear evidence of success.

The evidence from Colorado, Connecticut, Rhode Island, and Wisconsin is also indicative of success, but less comprehensive. Moreover, summary evidence from many of the remaining State reports, which are summarized in Appendix H, and which we have not had an opportunity to review, point in identical directions. In only a few States--notably Texas and Louisiana among those reviewed--does it appear that compensatory education had negligible or very minor effects.

The results of Title I in Los Angeles, California, pose a more difficult problem of judgment. There, only 17% to 32% of the children in the elementary grades receiving compensatory services improved their rate of achievement gain above that of the average disadvantaged child without assistance.[2/] Yet, we are informed that those children in the Los Angeles schools represented the most severe form of multiple economic and social disadvantagement, and this leads us to judge these very modest results as indicating relative "success" under the circumstances.

The evidence available to us concerning specific Title I projects, taken together with the Los Angeles evidence, demonstrates that successful compensatory education in settings of urban poverty poses a more difficult but not an impossible challenge. For example, among the more than 20 successful compensatory education projects identified by a research effort which sought to discover exemplary programs, many were inner city efforts enrolling large proportions of disadvantaged and minority children. [3/]

1/ See Appendix B.

2/ See Appendix I.

3/ See Appendix P.

The largest of these, the More Effective Schools program in New York, typifies the limited success of compensatory education in such environments. In the More Effective Schools program, average per pupil achievement gains often exceeded the upper gain rates for disadvantaged children, but usually fell short of the rate expected of the average American child.

Preliminary evidence available in the evaluation of Follow Through shows much the same pattern. [1] The Follow Through evaluation is the most rigorous in design of all evaluations of compensatory education; but it has not been completed. The following are the preliminary conclusions which can be drawn from the data at this time: children receiving compensatory help show very small but consistent improvement in learning compared with matched children without compensatory help; and, the more disadvantaged the children are, the more effective this compensatory help has been in improving their academic performance compared with similar children not receiving any help.

Evidence against the effectiveness of compensatory education

The most pessimistic view of compensatory education is that it has not worked and probably cannot be successful with disadvantaged children. The evidence we have just discussed contradicts this totally negative conclusion. Yet there is considerable evidence indicating that many compensatory education programs can be assessed as unsuccessful either because too few children improved their academic performance or the rates of improvement did not exceed that typical for poor children. Both large scale and situational evaluations contain evidence of this kind.

There have been at least three large-scale evaluations which have concluded that Title I was not successful:

- An evaluation undertaken by G. E. Tempo analyzed compensatory programs conducted under Title I in 11 large cities during school years 1965-67. The study found only slight evidence that the program enhanced achievement on average, and some clear instances where the children receiving services had actually fallen farther behind. [2]

- Two national evaluations of Title I have been conducted under auspices of the U. S. Office of Education. [3] Both of these evaluations were undertaken, not by on-site investigators, but through a Federal-State-local information reporting system and concluded that Title I participants had showed no improvement in achievement gains compared with nonparticipants.

1/ See Appendix N

2/ See Appendix M

3/ See Appendix M

In a technical sense, we have no dispute with the findings of these studies. However, we would note that the first study reviewed a strikingly unrepresentative sample of projects in the initial stages of Title I's implementation, and that the two USOE evaluations were severely limited and have the same limits as the State reports since they are derived from an information system rather than an on-site review. Also, they are severely limited in representativeness on this issue because they were marked by very high (over 90%) non-response rates for usuable achievement data. Furthermore, we know that the funds under this national Title I program were, on the average, spread very thinly among many students and that the average child received no more than one or two hours per month assistance in reading.

Yet another body of evidence against the effectiveness of compensatory education is the national evaluation of the Head Start program which concluded that full year Head Start programs produced cognitive gains for a small proportion of participants but not for most; and that the gains dissipated rapidly when the children entered normal school programs.1/ This study was a well designed and well implemented one, and its findings should be accepted. We would note, nevertheless, that Head Start is concerned with pre-school, rather than school programs and that little is known concerning the extent to which Head Start programs attempted to concentrate on cognitive improvements for the participating children. In addition, the children showing most gains were minority children in cities. The schools which the children entered after Head Start were not necessarily able to provide them with the enriched learning environment needed to preserve the achievement gains; we consider that effective compensatory education will require more than a single year's effort for most disadvantaged children.

The situational evidence against compensatory education is more impressionistic--there are relatively few validated failures of compensatory programs but there are many, many instances where close investigations of claimed success showed that the evidence was lacking or unreliable. Undoubtedly, many specific efforts labled as compensatory education at all levels of cost and intensity have failed.

The evidence indicating that compensatory education has not worked is, we judge, sobering but not overwhelming, a counsel of caution but not of despair.

THE COLEMAN REPORT: WHAT DOES IT SAY?

The findings of the Coleman report have been a keystone for many of the arguments that compensatory education cannot work. The Coleman report was a study of the relationship between achievement and a variety of social,

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1/ See Appendix O

regional and educational resource factors. The data from this analysis have been reanalyzed by a number of scholars in the years since 1966. One clear finding of the Coleman report is that variation in school spending within the range of existing educational practice was not a significant factor in explaining differences in the achievement of children.

The Coleman report also suggests that there are modest educational gains associated with the attendance of minority group children in classes and schools which are racially and socio-economically integrated.1/ This conclusion is accepted and is not at issue here. We have not presented compensatory education as an alternative to desegregation, but rather as a complementary policy.2/ It is our view that both before, during and after transfer from racially and/or economically isolated environments to more favorable learning centers, educationally disadvantaged children can benefit from compensatory education services.

In this connection, it is worth noting two additional features of the Coleman report:

- As the author has recently pointed out, the Coleman report should not be used to claim that physical desegregation is the only educational treatment that can have any positive achievement effects.[3]

- There is no direct evidence in the Coleman report for the conclusion, sometimes drawn from it, that compensatory education does not work. The Coleman report analyzed the existing range of school conditions in 1965-66 and had nothing to say about situations in which very substantial additional resources above normal school expenditures were provided for basic learning programs. The Coleman report did not analyze any such intensive programs.

1/ See Source 79.

2/ See Appendix T.

3/ New York Times, April 9, 1972.

EVIDENCE CONCERNING THE RELATIONSHIP BETWEEN LEVEL OF EDUCATIONAL RESOURCES AND ACHIEVEMENT GAINS

With respect to the first question on whether or not compensatory education can work, the evidence, as we have noted, is definitely encouraging. The important difference between success and non-success appears to depend on whether compensatory education funds have been channeled into traditional patterns of expenditure--salary increases, routine techniques, etc. -- or whether they have been used to develop supplementary, focused, compensatory education programs. The reason there is so much evidence of failure is that resources have more often been used in the former rather than the latter manner.

On the second question of how closely effective compensatory education is related to increased expenditures, the evidence, and therefore our conclusion, is much less clear. However, on the basis of the common sense observation that a supplementary compensatory education program will require additional resources, on the evidence that the elements of programs found to be successful require significant additional resources (e.g., individualized instruction), and on the basis of some fragmentary evidence from several studies which have attempted to relate achievement gains to additional expenditures, we conclude that an effective compensatory education program will indeed require significant additional resources and we have recommended as an approximation of the needed addition the figure of $300.00.

To this conclusion, though, we would tenatively add another: there is also an upper boundary of marginal costs, beyond which one would probably be wasting money in the application of compensatory resources. These conclusions are based on several of the studies we have reviewed.

> The State evaluations for California, Colorado, Connecticut, and less directly, Wisconsin all indicate a relationship between costs and effectiveness as costs move up the range from $150 to approximately $300 [1]
>
> Dr. Herbert Kiesling's analysis of successful compensatory education programs in California concludes that there is a consistent and strong relationship between educational resources in the range of $200-$300 and achievement gains for disadvantaged children. This report does not include, however, large city observations. [2]
>
> A recent examination of some state Title I reports, as part of a larger reanalysis of Title I data, concluded that there was no compelling evidence for a positive relationship between supplementary compensatory education expenditures and achievement gains. However, the same organization and authors had identified a number of successful compensatory programs.[3] Most of these were

1/ See Appendices B, C, D, G,
2/ See Appendix S.
3/ See Source #77 and Source #75.

characterized by application of educational resources on a concentrated basis.

At the other end of the scale, Follow Through (at $800 - $1,100 additional per pupil)and the More Effective Schools program (at over $1,000 additional per pupil) show no evidence that enormously high resources produce greater increments of achievement than programs in the $300 per pupil range.

It must be emphasized that we use the $300 figure as an approximation for the intensive approach--we expect variation in the actual amount depending on program characteristics. The notion of cost or a dollar amount is merely a short expression for the creative use of educational resources--teachers, paraprofessionals, diagnostic reading instruction specialists, individualized curricula, and the like.

PROGRAM STRATEGY IMPLICATIONS

Our assessment of the evidence is that compensatory education can help disadvantaged children learn and that the chances of success are usucl1y greater beyond the standard effort devoted to basic learning programs. Yet we know that money alone provides no guarantee of effectiveness--there is a continuing intellectual challenge to discover the kinds of learning enrichment that can work with different kinds of disadvantaged children and there is a need for coherent management, innovative planning and vigorous evaluation.

The state of the evidence which we have reviewed demonstrates a great lack of fully reliable, definitive findings, with respect to either national, state or local compensatory education efforts. We must:

(a) Sponsor longitudinal studies of the effects of compensatory programs over longer periods of time upon individual students;

(b) Establish controlled experiments which can determine more carefully than is now the case the relationships between program design, program costs, program management, the students served and achievement gains.

Having said we need to know more, much more in the near future we still conclude that we know enough now to formulate a program which will try to meet the educational needs of millions of disadvantaged children. This program has been shaped by our best judgement of evidence:

we know that compensatory education can be made to work for poor children therefore we will use this approach;

we know that poor children are most in need of educational help-therefore we seek to focus on the schools which contain substantial proportions of poor children;

we know that children need most help with the basic skills, reading and aritmethic-therefore we have stipulated that the funds be used for this purpose;

we know that successful programs often require substantial departures from typical educational practice and usually cost more therefore our provision for about $300 per child in compensatory services;

we know that children learn less effectively when there is a great degree of economic or racial isolation-therefore our provision for a "transfer bonus" which will encourage districts to reduce economic and racial concentrations within schools and our desire to provide priority in funding for districts which are making efforts to desegregation and reduce economic isolation;

we know that the Federal compensatory education program has not been successful as whole - that funds have not reached poor children in the correct proportion and that the formula grant aspects of the program have permitted significant amounts of funds to be spent in ways which have had only minor educational consequences for disadvantaged children-therefore we seek a project grant program which will permit us to attempt a coherent, focused and concentrated compensatory education effort.

A well planned and managed project grant program along these lines which combines the resources of the Federal Government with the creative enthusiasm and sensitivity of local school authorities offers the needed assurance that we can hope for some success.

In conclusion: a perspective

The educational aspects of the Equal Educational Opportunities Act are an integral part of this Administration's perspective on social policy. In his first message on Poverty in 1969, the President told the Nation about the negative preliminary results of the Head Start program and he added:

> "This must not discourage us. To the contrary it only demonstrates the immense contribution the Head Start program has made simply by having raised to prominence on the national agenda the fact--known for some time, but never widely recognized--that the children of the poor mostly arrive at school age seriously deficient in the ability to profit from formal education, and already significantly behind their contemporaries. It also has been made abundantly clear that our schools as they now exist are unable to overcome this deficiency." [1]

In August 1969 the President submitted the Family Assistance Program to the Congress. A major underlying assumption of the President's welfare reform initiative was that schools could only contribute a part of the resources needed to help poor children and that improved achievement for these children was more related to family income. This perspective was very much shaped by the findings of the Coleman Report.

A consistent theme of educational policy has been the search for reforms which would help poor children. In 1970, the President stated that:

> "The most glaring shortcoming in American education today continues to be the lag in essential learning skills in large numbers of children of poor families.
>
> "In the last decade, the Government launched a series of ambitious, idealistic, and costly programs for the disadvantaged, based on the assumption that extra resources would equalize learning opportunity and eventually help eliminate poverty.
>
> "In some instances, such programs have dramatically improved children's educational achievement. In many cases, the programs have provided important auxiliary services such as medical care and improved nutrition. They may also have helped prevent some children from falling even further behind.
>
> "<u>However, the best available evidence indicates that most of the compensatory education programs have not measurably helped poor children catch up.</u>" (Emphasis in the original)[2]

1/ Source: 98.

2/ Source: 97.

At that time the President concluded that "more of the same," whether in programs called compensatory education or in regular school practices simply would not provide the effective help needed by poor children. A major part of the reform which the President proposed was establishment of a National Institute of Education, which is to provide a Federal basis for stimulation of educational innovation and the discovery of programs and practices that can be effective.

Similar themes were repeated in the President's recent message on the Equal Educational Opportunities Act--routine compensatory and school programs are not enough; there is a need for innovative concentrated compensatory efforts focused on basic learning skills in order to help poor children.

Once again the Congress has before it a proposal intended to help millions of poor children--we know that the problems are too great to wait for our completely certain knowledge. Responsibility requires that we make our best efforts on the basis of the knowledge before us.

APPENDIX A

INTRODUCTION TO THE EVIDENCE

As in most areas of social policy analysis and research, there are profound epistemological problems in the literature dealing with the evidence on compensatory education whatever the techniques of analysis. However careful the design of a study, there are likely to be different opinions concerning its validity, its intrinsic meaning and its relation to governmental policy alternatives.

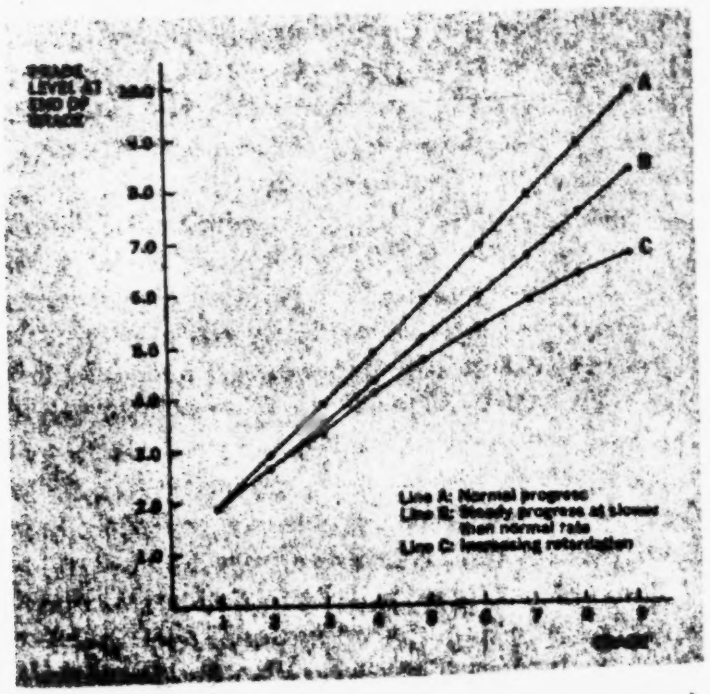
There is a paradox of first magnitude inherent in most social and educational research: if a study is as completely rigorous as might be required to provide clear and unmistakable conclusions, its findings will be difficult to project into the real world; and, conversely, those analyses which are done in the midst of real school practices are more relevant to policy but more likely to be flawed in method and precision of conclusion. But, we add that it is possible to undertake policy relevant studies that are carefully designed and conclusive.

How to Assess Progress in Learning

The evidence we have summarized is on the whole limited to studies which contain pre- and post-test standardized achievement data. This implies a significant decision on our part to consider as evidence, positive and negative, a set of measures which it has been argued tend to understate the capabilities and achievement gains of poor children because of various content and measurement biases. We do not feel that standardized tests are the only way to measure the achievement of children and we do agree that progress in educational measurement is vitally needed so that all economic and cultural groups will be fairly assessed. Nevertheless, for the purpose of this analysis we felt it essential to limit our consideration to achievement data because it provides the only basis for an accumulation of evidence across such a wide diversity of studies and is the only commonly accepted set of measures now available.

Among those who agree on the use of achievement test data there is a basic question concerning the use of "achievement gain" scores as measures for improvement. One point of view is that even if a child gains at the rate of one year per year of instruction but still ends the sixth grade at a reading level of 4.5 (instead of 6) he has not really made much progress. This is a matter of judgment. The illustration below contrasts the grade level attained by children who progress normally and the usual pattern for disadvantaged children which results from the typical pattern of cumulative lag in reading attainment.

FIGURE 1: Progress of three children at different rates from the same starting point



This illustration makes clear that the first step in helping disadvantaged children is to improve the rate at which they learn--as long as that remains at the maximum rate of .7/year for each year of instruction, these children fall farther behind each year (examples B and C). For that reason we judge improvements above that typical for disadvantaged children in the achievement rate to constitute successful compensatory education.

Clearly, we consider compensatory education to be much more successful and effective when the absolute achievement level of the disadvantaged children is at or above that typical for their grade. And without question the ultimate objective of compensatory efforts should be to help disadvantaged children achieve the same reading levels as their classmates.

Broad Issues of Data Validity

Except for the very carefully controlled, small scale research studies, in all the evaluations of compensatory education, we are faced with one or another set of data problems which create uncertainty. Let it be noted that these uncertainties apply as much to the negative as to the positive evaluations of compensatory education. There are two major kinds of uncertainties: those pertaining directly to the validity of the achievement results; and, those relevant to the nature of the sample from which the

results are drawn and hence to the generalizations possible as a result of any particular study. These are separable issues: a study may be valid for the group of children it has included whether or not that group of children is representative of all the children in a given community, state or nation, or any category of children such as "disadvantaged children."

Of particular concern in this discussion is the intrinsic validity of the studies because we know that there is no evidence available on compensatory education which is or could be truly reflective of the United States as a whole--and this applies to the national evaluations of Title I which were based upon achievement data derived from an unrepresentative sub-group of children in a sample that was intended to be representative.

The following is a brief discussion of the effects of the major problems associated with large-scale evaluations which use reported data. This applies to the two national evaluations of Title I, the state evaluations of Title I and all the city evaluations except for the specific sub-studies which used control or matched comparison group designs and the same achievement tests.

A. Pre- and Post-test results reported for different children

Effect: If this happens because of the movement of children, especially disadvantaged children in and out of schools during the year, then the effect is to understate the real achievement gains of children.

If this is due to conscious substitution of better performing children, then of course the effect is to overstate achievement gain.

B. Mixing of different tests as a basis for obtaining overall average gains

Effect: There are statistical procedures for substantially neutralizing the distorting effects of the large variations in the results obtained with the same children on different tests. If these techniques are not used the effect can be to understate or exaggerate the achievement results depending on how the scores are derived and overall averages computed.

C. Use of out of phase tests

Effect: May understate or overstate achievement gains depending on whether a "floor" or "ceiling" test has been used.

D. Poor test administration and normal clerical errors

Effect: May either understate or overstate gain.

E. Regression toward the mean

Effect: Due to intrinsic aspects of certain analytical procedures and measurement errors (test unreliability) low scoring students may score higher on a post-treatment test in the absence of any special treatment effect. The extent of this effect varies with a number of factors.

The cumulative weight of such errors can of course be very large. One assumes that the states and cities which regularly and systematically conduct large scale evaluations of compensatory education take means to reduce the errors due to these and other factors. The State of California for example used pre-treatment and post-treatment test data in its 1970-71 analysis only when assured that it was for the same children; and it has devised procedures to eliminate error due to mixing of scores from different standardized tests and out of phase testing.

Basis for selection of evidence

This review is based on all the evidence known to the Department at this time. All federally funded evaluations of ESEA Title I and all major analyses of other compensatory programs have been included. Most state evaluation reports containing achievement test data have been included. The state reports which had the most achievement data were analyzed in greater depth. The first HEW analysis of state evaluation report achievement data was done in 1970 and identified the comparatively few reports with substantial amounts of data.

There are undoubtedly other city or county evaluations of compensatory education in addition to those we have included. But those we have summarized are the only ones known or available to HEW. The "situational evidence" has been selected to provide examples of fairly rigorous evaluations of successful compensatory programs.

Our intention has been to present the major work relevant to the policy issues under consideration--it has not been our intention to undertake a comprehensive academic survey of everything written about every compensatory education project.

APPENDIX B

CALIFORNIA

Issue: Does Compensatory Education Work?

In California students are usually selected for participation in Title I programs only if their achievement rate has been less than .7 year's growth for each year in school.[1] This means that we can assume a maximum of .7 month gain per month of school to be the baseline of comparative performance for children receiving compensatory services in that state.

Using a state-wide testing program with pre-treatment and post-treatment comparisons using standardized achievement tests, the state conducts a large scale annual evaluation of the effectiveness of Title I compensatory services. In the 1970-71 school there were additional efforts to ensure the validity of the results and achievement test data for 113,408 children of the 248,289 children participating in the reading program met the rigorous criteria.[2] The analysis indicates that 61% of the participating children made achievement gains in reading greater than would have been expected without compensatory services (see California Table I below).

CALIFORNIA - TABLE I

Reading Achievement Gains of ESEA, Title I, Public School Students by Grade Level, 1970-71 /2

Grade level	Number of students	Percent of students, by month's growth			
		Substantial 1.5+	Moderate 1.0 to 1.4	Moderate 0.7 to 0.9	Little or none 0.6 or less
One	10,780	5.2	19.4	22.9	52.5
Two	14,391	4.4	29.7	32.6	33.3
Three	23,438	2.5	14.1	43.3	40.1
Four	20,236	10.4	20.0	29.7	39.9
Five	18,444	7.3	13.7	35.6	43.4
Six	17,525	6.7	13.4	43.1	36.8
Seven	2,185	13.8	34.9	32.5	18.8
Eight	1,838	13.4	19.8	35.0	31.8
Nine	2,725	21.4	28.9	33.6	16.1
Ten	1,267	17.7	33.5	31.0	17.8
Eleven	405	12.6	35.1	38.0	14.3
Twelve	174	39.1	33.3	16.1	11.5
Total or average	113,408	7.0	18.6	35.5	38.9
		7.0	54.1		38.9

1 Source: 10

2 Achievement test data was included only when pre and post standardized test data on the same children were available. Also, results were only

Of particular note is the fact that 26% of all these children showed rates of gain above that typical for children who are not disadvantaged.[1]

In mathematics performance the results are similar. Achievement test data for 103,339 students was analyzed and showed that 69% gained at a rate greater than customary for disadvantaged pupils. Of these, 32% showed ac-achievement gains greater than expected for the average pupil (see California Table II).

CALIFORNIA TABLE II

Mathematics Achievement Gains of ESEA, Title I, Public School Students by Grade Level, 1970-71 /2

Grade level	Number of students	Percent of students, by month's growth			
		Substantial	Moderate		Little or none
		1.5+	1.0 to 1.4	0.7 to 0.9	0.6 or less
One	9,223	3.2	16.3	17.1	63.4
Two	11,836	7.3	22.7	38.2	31.8
Three	20,982	7.8	36.2	33.7	22.3
Four	19,773	10.1	35.3	35.3	19.3
Five	17,559	7.8	16.1	50.7	25.4
Six	16,517	5.3	13.8	40.6	40.3
Seven	2,200	3.6	15.3	32.8	48.3
Eight	1,810	11.4	2.6	41.1	44.9
Nine	2,129	13.2	22.3	25.8	38.7
Ten	859	19.4	15.1	22.0	43.5
Eleven	281	5.7	62.6	7.5	24.2
Twelve	170	64.1	9.4	1.2	25.3
Total or average	103,339	7.6	24.3	36.8	31.3
		7.6	61.1		31.3

included if more than 25 children in a school had taken the tests for a specific grade level.

1 Source: 10p. 12.

2 Source: 10p. 19.

Trend over time

A comparison of reading achievement results over the last four school years shows that the proportion of disadvantaged pupils showing improvement above the baseline ranged from 52% in 1967-68 to 67% in 1969-70. (See California Table III).

CALIFORNIA: TABLE III

Reading Achievement Gains of ESEA, Title I, Public School Students 1967-68 Through 1970-71 [1]

Year	Achievement Results (% of pupils)		
	Substantial gain (1.5+)	Moderate gain (.7-1.4)	Little or No gain (.6 and less)
	%	%	%
1970-71	7	54.	39.
1969-70	9.4	57.5	33.
1968-69	15.5	55.2	29.2
1967-68	10.9	40.6	48.6

1/ Source: p. 13 (Percentages prorated to 100% for those children included in the analysis)

Non-public schools

These positive results also hold for children receiving compensatory services in the non-public schools. Reading achievement data was analyzed for 4,394 children in the 1970-71 school year and indicated that 68% showed gains larger than expected of disavantaged children. More than 32% of these children gained at a rate greater than the expected national norm. In mathematics achievement 69% of the 3,548 children whose scores were analyzed showed gains greater than might have been expected for disadvantaged children.[1] (See California Table IV below)

CALIFORNIA - TABLE IV

Achievement gains for non-public school pupils: Reading and Mathematics, 1970-71

Subject	Number of students	Percent of students, by month's growth: Substantial 1.5+	Moderate 1.0 to 1.4	Moderate 0.7 to 0.9	Little or none 0.6 or less
Reading	4,394	10.4	26.9	30.5	32.2
Mathematics	3,548	11.5	60.0		29.0

1 / Source:10 p. 20 (Percentages reflect the proportion of students in different gain dategories among those with analyzed achievement data).

Another type of evidence concerning effectiveness

Using 1970-71 data the California Department of Education selected a sample of schools with "saturated" Title I services - more than 75% of the enrolled children were Title I participants. Then a random selection was made of a set of schools matching the saturated schools in ethnicity but without any children receiving Title I services. The result of a comparison of the achievement test results for the two groups of children was that they were nearly identical.[1] This finding is very important because it is a fact that the children in schools where 75% or more of the children receive Title I services are the most disadvantaged in the state and the comparison group is likely to have contained only a small proportion of disadvantaged children. The results suggest that even in this "worst case" comparison the saturated compensatory program was able to bring the absolute achievement level of the most disadvantaged children up to equality with their better-off peers.

A second difficult case analysis was conducted with the 1970-71 data. Picking two grades arbitrarily, results were examined for the children who performed least well in the pre-treatment tests (those in the lowest quartile ± .2GE). The expectation would be that these children constitute a severe test of the efficacy of compensatory education. The results indicate that significant proportions of these children have made gains above .7--note, however, that none in the third grade made substantial gains (see table California 5).

CALIFORNIA TABLE V
Achievement Gain Rates for Children in the Lower Quartile of Initial Performance--Reading, 1970-71

Grade	Test	Number Analyzed	Proportions in achievement gain groups		
			Substantial (1.5+)	Moderate	Little or none (.6-)
3	CTBS	1,000	--	50-65%	30-40%
3	Stanford	3,500	--	65%	35%
6	CTBS	3,000	8%	67%	25%

Source: Analysis provided the Department of Health, Education and Welfare by the California State Department of Education, working papers.

1/ Specifically a mean raw score of 45 for the third grade in the saturated schools and 46 for the children in the matched schools. Sources: print-out from SEA.

Is there a relationship between cost and probability of success?

Since the 1969-70 school year California has modified its Title I regulations to emphasize that services should be concentrated at the level of at least $300 per child.[1] This formalized a preference that has been evident in the state department of education at least since the 1967-68 school year.[2] Dr. Alexander Law, Chief of Program Evaluation for the State, reports that for the 1970-71 school year he has audit and other evidence suggesting that local districts have in fact allocated their funds in accordance with he $300 per child guideline and that there is little likelihood of a large variation in supplementary per pupil expenditures above that level because most districts prefer to reach as many children as possible.

This strongly suggests that the California Title I program for 1970-71 can be considered a fairly good test of the intensity hypothesis. Under these assumptions, our judgment is that the high proportions of children making improved gains in reading and mathematics strongly suggests that the strategy of concentrating resources at some "critical mass" level is a sensible one. This does not mean that this is sufficient condition for success as is indicated by the 40% of the children who made no improved gains in reading and the 31% showing no improvement in mathematics in 1970-71.

The average $300 per child in Title I funds was not all used for basic learning programs in reading and mathematics. It is in fact not possible to separate this aggregate figure into its components on a school by school basis and thereby derive a direct correlation with mean achievement test scores by school. However, an average of supplementary funds for reading and mathematics for the Title I participants has been calculated which includes Title I and other compensatory aid sources: in 1970-71 the average child received $242 in compensatory reading services and $140 in mathematics compensatory services. This average amount for reading reinforces the notion of a "critical mass" while the lesser amount for mathematics in combination with the positive performance results shows that the intensity needed may vary from subject to subject.

Questions about the cost data

The FY 1969 California state report concluded that there seemed to be a strong and clear relationship between cost and achievement gains in compensatory programs. As a result the U. S. Office of Education sent two individuals to consult with state officials: they collaboratively prepared a quickly done analysis of 709 Title I projects where cost and achievement data were both available.[3] A brief summary of that joint analysis follows:

1/ Source: p. 3.
2/ See, passim Sources:
3/ This is the California study cited by the President in his message on EEOA, March 17, 1972.

CALIFORNIA TABLE VI
Relationship Between Cost and Achievement[1]

	Total	Very Substantial Achievement Gain (2.0+) (2.0+)	Substantial Achievement Gain (1.4 (1.4 - 1.9)	Moderate Achievement Gain (1.0 - 1.4)	Least Achievement Gain (less than 1.0)
# pupils	10,522	2,434	2,664	N/A	5,419
% of sample	100%	23.1%	25.2%	N/A	51.5%
Average per pupil expenditure	N/A	$298	$271	N/A	$160

The liminations of that cost data have been well noted in the original USOE document and the subsequent HEW summary. This 1968-69 analysis was seen as a preliminary one at best.

Because of strong interest on the part of the Los Angeles County Board of Education in the findings of that state evaluation, the County undertook its study of the relationship between cost and reading achievement for the group of districts within its jurisdiction.[2] That study concluded that "there was little evidence of relationship between cost and reading achievement . . . in the programs analyzed".[3]

This analysis was carefully done and one must accept that conslusion for the 30 districts analyzed and for the 1968-69 school year. Two important points are worth noting: the authors themselves state that there is a good chance that the absence of a relationship is due to the inaccuracy and adequacy of the cost data available to them rather than to a demonstrated non-relationship; secondly, the Los Angeles County analysis has been used by some to refute the 1968-69 California state report - but these two reports considered different sets of districts.

Concerning the general validity of the cost data used for the joint USOE/SEA analysis in 1968-69 the officials in California admit that the cost data is far from perfectly accurate and reliable yet they contend that those were the "reasonable estimates of those most able to make reliable statements about costs" the local school authorities.[4]

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1 / Source for this table is data used to prepare the FY 1969 California State Report. A sample of 10,522 students in Title I projects with reading as primary emphasis. The 10 largest were not included because of late submission of data. Expenditures were derived from LEA evaluation reports, LEA application forms and LEA financial reports.

2 / Source #9 p. 15

3 / Ibid., p. iv

4 / Dr. Vincent Madden, Chief, Bureau of Compensatory Education, Evaluation and Research, Sacramento, Claifornia

APPENDIX C

Issue: Does compensatory education work?

In Fiscal Year 1971 the Colorado State Department of Education collected reading achievement data for a sample of participating Title I public pupils. A random sample survey stratified according to size of grant was sent to 50% of the reading projects; reading achievement data for various pre and post tests were received and analyzed for 1,777 pupils in grades 2-8. These scores accounted for approximately 12% of all pupils receiving Title I remedial funds in reading in Colorado, however, the scores probably are not representative of the entire state progress. Noteworthy gains in reading were demonstrated by this set of pupils. Table I presents the average gain in grade equivalents per month for these pupils; it should be kept in mind that the disadvantaged child is characterized as achieving at approximately .07 GE/month.[1] Out of these 1,777 pupils, 1,430 of 80% achieved at .08 GE/month or greater, 25% of those gaining or 351 pupils showed substantial gain by achieving at .15 GE/month or greater.

In Colorado a substantial number of remedial reading programs are financed through a three year program ending this year entitled the "Educational Achievement Act of Colorado." The purpose of the funds is to concentrate efforts on pupils significantly below grade level in reading achievement; for example, pupils considered for the project were normally two or more years below grade level in reading ability. During 1970-71, 6,521 public pupils received compensatory reading instruction from funds provided by this act; an evaluation in October, 1971, conducted by the University of Denver [2] represented 5,667 pupils or 87% of the compensatory reading instruction population. The evaluation organized the data according to six types of programs. (See Table II). The mean gain in reading achievement test scores was moderate to substantial and varied from a low of .65 grade equivalents to 1.19 GE (normally the disadvantaged pupil achieves at a level of .7 GE). The project objective of producing a one-year gain in reading achievement test scores was met in one-half of the programs.

It is of interest to note that the senior high pupils in program 1 which received the lowest change in achievement (their scores fell below their pre-test scores by .73 years) were also the pupils found to be absent from school the greatest amount of time (approximately 6 days a month).

Selected Site

A Title I evaluation for FY 71 was done in Poudre School District RI, Colorado, between a treatment and control group showing a significant impact on reading achievement for 447 fourth grade Title I students compared to 502 similar fourth grade non-Title I students. (See Table III [3])

[1] In this entire review we use .7 GE per year gain as the maximum performance for most disadvantaged children and this is what we mean by "typical" - we do not use this as the mean of the gains shown by disadvantaged children.

[2] An Evaluation of the Compensatory Reading Programs Resulting from SB 174 for the 1970-71 School Year, prepared by the Bureau of Educational Research, University of Denver, October, 1971. Source: 12

[3] Colorado Annual Evaluation Report Title I ESEA, FY 1971, pp. 55-57 Source: 14

A greater percentage of students were found to be reading above the expected reading grade in Title I schools than in non-Title I schools.

Issue: Is there a Relationship Between Cost/Intensity and Probability of Success?

The Title I Colorado evaluation for Fiscal Year 1969 concluded that the evidence presented by ranking projects according to academic achievements in reading, language arts, and mathematics indicates that a per pupil expenditure of more than $200 correlates with successful achievement. Table IV presents this evidence - the most successful reading projects were found to have an average per pupil expenditure of $285, the most successful language arts projects $225 and the most successful mathematics projects $169. This compares to the middle project averages for those subjects of $178, $207 and $175. The reading data presented in the state report is based upon the selective ranking of 15 projects out of a total of 42 reading projects, while the scores for language arts are presented more completely by showing 9 of 11 language art projects with achievement data.

The 1971 evaluation of the Educational Achievement Act of Colorado has given some analysis of per pupil expenditures related to achievement gains in reading scores. (See Table V). The per pupil expenditures varied considerably; and interestingly, the least expensive program (Program 2 at $66/pupil) experienced one of the higher averages of gain in reading achievement (1.08 GE). However, it is worth noting that projects were grouped under this program because they employed teacher aides utilizing commercially prepared reading programs, and by looking at the last column on Table V it is realized that for all other programs the average per pupil expenditure involved in producing a one-year gain in reading achievement test scores was always above $250.

Limitations of the Data

Although the reading achievement data from FY 1971 was taken from a stratified random selection of projects, some of the surveyed projects did not report achievement data and the 1,777 student sample is probably limited in its representativeness of the entire state. Colorado does not administer a state-wide testing program; it is assumed the test scores reported from each project are comparable. The analysis of the data was done quickly and little is known about the characteristics of the children in the sample (i.e. minority or most economically deprived).

The cost data presented in the FY 1969 report does not show information for the total sample. Reanalysis of the data given, however, does indicate there is a relationship between cost and success. The method of estimating costs is not stated nor are the primary objectives of the projects.

TABLE I

Average Gain In Grade Equivalents/Month

Grade	Substantial Gain .15+ # Pupils	Substantial Gain .15+ # Samples	Moderate Gain .11-.14 # Pupils	Moderate Gain .11-.14 # Samples	Low Gain .08-.10 # Pupils	Low Gain .08-.10 # Samples	No Gain ≤ .07 # Pupils	No Gain ≤ .07 # Samples
2	35	2	75	3	104	5	10	1
3	60	2	59	4	100	4	62	4
4	54	3	80	5	135	4	75	6
5	64	4	137	6	39	2	52	4
6	29	3	80	5	134	6	37	3
7	86	5	3	1	95	3	44	3
8	23	2	33	2	5	1	67	3
Total	351	21	467	26	612	25	347	24

Totals: 96 Samples
1,777 Pupils

Source: Reanalysis of Colorado Annual Evaluation Report Title I FY 71 and unpublished data from Colorado printout 11/10/71

Colorado FY 71 - Reading Achievement, Title I

TABLE II

Summary of Reading Test Data
Evaluation of Educational Achievement Act of Colorado

Grade Level	Program Number 1	2	3	4	5	6	Average for Grade Level
Elementary (K-6)							
Mean Pre-test	2.22	2.26	2.36	No	2.24	N/A	2.25
Mean Post-test	2.99	3.20	3.15	Data	2.89	N/A	3.06
Difference	.77	.94	.79		.65	N/A	.81
N	1990	1053	972	33	81	N/A	
Junior High (7-9)							
Mean Pre-test	4.57	4.51	4.63	N/A	N/A	2.53	4.59
Mean Post-test	5.62	6.42	5.77	N/A	N/A	3.56	5.73
Difference	1.05	1.91	1.14	N/A	N/A	1.03	1.14
N	324	46	801	N/A	N/A	11	
Senior High (10-12)							
Mean Pre-test	7.41	7.51	6.53	N/A	N/A	N/A	6.98
Mean Post-test	6.68	9.29	7.56	N/A	N/A	N/A	8.25
Difference	-.73	1.78	1.03	N/A	N/A	N/A	1.27
N	15	150	191	N/A	N/A	N/A	
Average for Program							
Mean Pre-test	2.58	2.97	3.69	No *	2.24	2.53	
Mean Post-test	3.38	4.05	4.65	Data	2.89	3.56	
Difference	.80	1.08	.96		.65	1.03	
N							

N/A indicated that program was not implemented at that grade level.

*The reading achievement test data for the Program 4 districts were received after the evaluation was completed. A mean gain in reading achievement test scores of 1.19 years was observed for this district.

Source: An Evaluation of the Compensatory Reading Programs Resulting from SB 174 for the 1970-71 School Year, October, 1971, p. 10.

TABLE III

POUDRE, COLORADO - TITLE I COMPARISON

The current standing in reading of all fourth grade Poudre RI students has been carefully tabulated by the Reading Services Center Using scores from the California Mental Maturity and California and Reading Tests given in September. In order to make an impartial comparison between Title and Non-Title Schools the Expected Reading Grade for each was calculated using the Gates-McKillop formula with the following results:

Title Schools		Non-Title Schools
447	4th Grade Students tested twice	502
79 - 136	I.Q. Range	79 - 140
65% - 35%	Ratio between high I.Q. and low I.Q. students	84% - 16%
2.0 - 7.8	Grade Placement Range	2.0 - 8.5
3.0%	Reading 1 or more years above ERG	6%
60.0%	Reading at or near ERG	51.0%
37.0%	Reading 1 or more years below ERG	48.4%

What has been accomplished since 1966 when reading specialists began working in Title Schools? One Title and one Non Title School were carefully surveyed. Those two schools were chosen because their boundaries have remained relatively stable.

Title Schools			Non Title Schools	
1966	1969		1966	1969
48%-52%	32%-68%	High-low I.Q. ratio	89%-11%	88%-12%
4%	16%	Reading 1 or more years above ERG	5%	0%
67%	66%	Reading at or near ERG	74%	44%
25%	10%	Reading 1 or more years below ERG	21%	56%

Source: Colorado Annual Evaluation Report, Title I ESEA, FY 1971, p. 57.

TABLE IV

Colorado Achievement Related to Cost

	RANKING *		
	Top Projects	Middle Projects	Bottom Projects
Reading			
# Pupils	2202	4151	1432
# Projects	5	5	5
Mean Change in T-score	3.4	2.5	-1.4
Aver. per pupil Expend.	$285	$178	$112
Language Arts			
# Pupils	403	604	13,730
# Projects	3	3	3
Mean Change in T-score	2.3	1.9	-2.4
Aver. per pupil Expend.	$225	$207	$167
Mathematics			
# Pupils	5,036	15,232	1,207
# Projects	5	5	5
Mean Change in T-score	5.4	1.2	-.3
Aver. per pupil Expend.	$169	$175	$146

*Projects were ranked on the basis of two factors: the mean change in T scores (a score conversion for Colorado which includes the standard deviation) and the percentage change in the proportion of students who scored below the lowest quartile, the greater the reduction of pupils in that quartile, the higher the project was ranked.

Source: Colorado Annual Evaluation Report Title I, FY 1969, pp. 9-13, reanalysis of the data presented. The averages for the projects were recalculated by multiplying the number of students by the P.P.E., adding the results and dividing by the number of students - and similarly multiplying the changes in T-scores for each project by the number of students in that shift and dividing by the total number of students for each category.

TABLE V

Comparative Costs of Reading Programs
Evaluation of Educational Achievement Act of Colorado

Program	Total SB 174 Expenditures	Number of Students	Per Student Cost	Years Gain Reading Scores	Per Student Cost for 1 Year's Gain
1	$ 599,071	2,768	$ 216	.80	$ 270
2	85,050	1,289	66	1.08	61
3	705,202	2,321	304	.96	317
4	9,500	33	288	1.19*	242*
5	28,381	88	323	.65	496
6	7,581	22	345	1.03	335
Total all Programs	$1,434,785	6,521			

*The reading achievement test data for the Program 4 district were received after the evaluation was completed. A mean gain in reading achievement test scores of 1.19 years was observed for this district.

Source: An Evaluation of the Compensatory Reading Programs Resulting from SB 174 for the 1970-71 School Year, October 1971, p. 37.

APPENDIX D

Connecticut

A. Does Compensatory Education Work?

The number of pupils served in Connecticut compensatory programs has decreased each year since 1968. Prior to that date, school districts attempted to reach an increasing number of children each year. This approach of spreading out limited funds did not greatly change measured achievement of the disadvantaged. After 1968, school districts began to concentrate program efforts on fewer pupils with the expectation that more programs would be successful. Since 1968 the number of program participants has decreased from 98,769 to 56,093 in the 1970-71 school year (Table 1). Along with the increased concentration of services per child came an increased number of programs in which the State's most seriously disadvantaged pupils did well.

Programs serving the severely disadvantaged are defined as those programs where the average pre-test achievement scores are at least one year below grade level. 142 of the State's 351 compensatory programs served severely disadvantaged pupils in 1970-71. In 109 of these 142 programs the pupils achieved, on average, a year or more growth in basic skill areas over the course of 1970-71. Seventy-nine (79) of the 109 exemplary districts served public pupils; the remaining programs served non-public pupils.

B. Is there a relationship between cost/intensity and probability of success?

Reading test gain rates for the 79 public exemplary programs were compared to five other factors by means of product moment correlation coefficients. The results of the correlation tests for the public school exemplary programs show that program costs are positively related to program test results (Table 2).

In order to insure that this finding was not peculiar to the exemplary programs the test was replicated for all 145 public programs serving elementary grades and having pre-treatment and post-treatment reading test data. The positive relationship between program costs and rate of achievement proved consistent ($r=+.292$, significant at the 1% level).

Program cost data are presented in table 3.

C. Limitations of the Data

Standardized achievement test data are reported by program in varying measurement units which required computational conversion to a comparable rate of gain which may introduce some degree of bias to the data.

CONNECTICUT - TABLE 1

COMBINED COMPENSATORY PROGRAM STATISTICS: 1970-71

UNDUPLICATED COUNT OF PUPILS AND COMBINED STATE AND FEDERAL AID

Year	Public Pupils	Nonpublic Pupils	Total Pupils	State and Federal Dollars	Program Per Pupil Expenditure
1970-71	50,775	5,318	56,093	$18,662,744	$333
1969-70	59,633	8,276	67,909	18,466,605	272
1968-69	69,119	8,042	77,161	13,895,775	180
1967-68	92,198	6,571	98,769	13,889,171	140
1966-67	71,084	4,406	75,490	13,544,765	179
1965-66	58,018	2,788	60,806	8,631,431	141

CONNECTICUT - TABLE 2

EXEMPLARY PROGRAMS IN PUBLIC ELEMENTARY SCHOOLS

RELATIONSHIP BETWEEN READING TEST GAIN RATES AND OTHER FACTORS

Variable	Number of Programs	Correlation Coefficient	Relationship
grade promotion	73	+ .03	not significant
school attendance	70	- .01	not significant
program $ expenditure	75	+ .32	significant (.01 level)
town $ expenditure	75	+ .12	not significant
program hours	75	+ .10	not significant

Source: Compensatory Education in Connecticut 1970-71 prepared by the Connecticut State Department of Education. p.5, 28 15.

CONNECTICUT - TABLE 3

Type of Compensatory Program	Median per pupil expenditure
Exemplary programs in public elem. schools	$383
All elementary compensatory reading programs	337
All compensatory programs	357

Compensatory Education in Connecticut 1970-71 prepared by the Connecticut State Department of Education Source: 15.

APPENDIX E

RHODE ISLAND

A. Does Compensatory Education Work?

Evaluation of published results of standardized statewide Gates-MacGinitie reading tests administered to participants in compensatory reading programs for two consecutive academic years (1968-69 and 1969-70) indicates that substantial gains were made during each year's participation in the compensatory reading programs. More than 3,000 pupils were tested each year; all were educationally deprived children attending schools serving the highest proportion of low income families.

An examination of the pre-program test scores shows that the participants average reading level was well below their grade level. This was increasingly true with each successive grade (Table 1). Examining the post-program test scores shows these same problem readers gaining in average reading scores at a faster than normal rate for their ages during the course of the compensatory program (Table 2).

Examination of the second year's (1969-70) post test scores reveals that the average reading score for 2nd, 3rd, 6th and 10th grade was at or above grade level, and all other average grade scores had shown substantial increase, although not yet reaching grade level. This was an improvement over the previous years (1968-69) test results, where only the 2nd grade average post test score was at or above grade level.

In terms of average monthly gains, the compensatory reading pupils in grades 2 through 10 showed a pre-program range of 0.5 to 0.8 months for each month of school, with 0.7 as the average for all grades. These same children, re-tested at the completion of that year's compensatory reading program, displayed gains ranging from 0.8 to 2.4 months gain for each month of school, with the average for all grades climbing to 1.2 months for each month of school.

Results for the 1969-70 school year were even more dramatic. Average monthly gains for all grades was 0.6 at the beginning of the school year and climbed to an all-grades average of 1.9 months gain for each month of the compensatory reading program. This means that children whose reading performance gain was only slightly more than half the normal gain rate were now gaining at almost twice the normal gain rate. The grade by grade average gain ranged from 1.1 to 3.5 months for each month of school.

A review of unpublished reading test results for more than 3,000 of these children tested during the 1970-71 school year shows that approximately 60% of the children are performing above the upper norm for disadvantaged (0.7 average monthly gain) in the area of vocabulary and approximately 55% are performing above 0.7 in reading comprehension.

B. Is there a Relationship between Cost/intensity and probability of Success?

During the 1970-71 school year more than 3,000 of the compensatory reading pupils received pro-program and post-program standardized achievement tests. These tested children attended 18 different school districts. The per pupil expenditure for the compensatory reading program differed in each school district. The average monthly gain figures for each pupil based on their post-test achievement scores are divided into three performance groups - low, average and high. The per pupil expenditure for the compensatory reading program could then be associated with one of the three performance groups with the following results:

Direct Compensatory Reading costs (PPE) Related to Grouped Achievement Scores

Per Pupil Expenditures for Compensatory Reading Programs Achievement Level

	Low (AMG 0.7)	Medium (AMG 0.7 - 1.0)	High (AMG 1.0)
Vocabulary	$224	$240	$247
Reading Comprehension	$218	$238	$258

The differences in per pupil expenditures for both vocabulary and comprehension scores is consistent but of small magnitude - ranging from $218 to $258 between the lowest and highest achieving groups.

1/ Source of the above table is unpublished data collected by the Rhode Island State Agency for Elementary and Secondary Education: 1970-71 school year.

Grades included = 2 - 6

Standardized Test = Gates-MacGintie Vocabulary and Reading Comprehension

Average Monthly Gain = AMG = $\frac{\text{Post test grade score - pre test grade score}}{\text{number of elapsed months between tests}}$

AMG for disadvantaged children = 0.7 (upper boundry)

AMG for normal learners = 1.0 (National norm)

RHODE ISLAND - TABLE 1

PRE-AND POST-TEST READING ACHIEVEMENT DATA, FY-70

Grade	Combined Pretest	Combined Posttest	PAMG	AMG
1 (N=23)	1.5	1.8		.3
2 (N=856)	1.6	2.3	.5	1.1
3 (N=764)	2.0	3.0	.4	1.4
4 (N=364)	2.6	3.6	.4	1.3
5 (N=339)	3.3	4.5	.6	1.6
6 (N=204)	5.0	6.1	.8	1.6
7 (N=242)	4.4	6.0	.6	2.2
8 (N=175)	5.4	7.1	.6	2.4
9 (N=194)	6.1	7.5	.7	3.5
10 (N=35)	9.0	10.0	.8	1.8
TOTAL (N=3196)			.6	1.6

Source: Title I, Elementary and Secondary Education Act in Rhode Island - Fifth Annual Evaluation/Fiscal Year 1969-70, published by the Rhode Island State Agency for Elementary and Secondary Education. p. 43.

RHODE ISLAND - TABLE 2

COMPARISION OF READING ACHIEVEMENT DATA

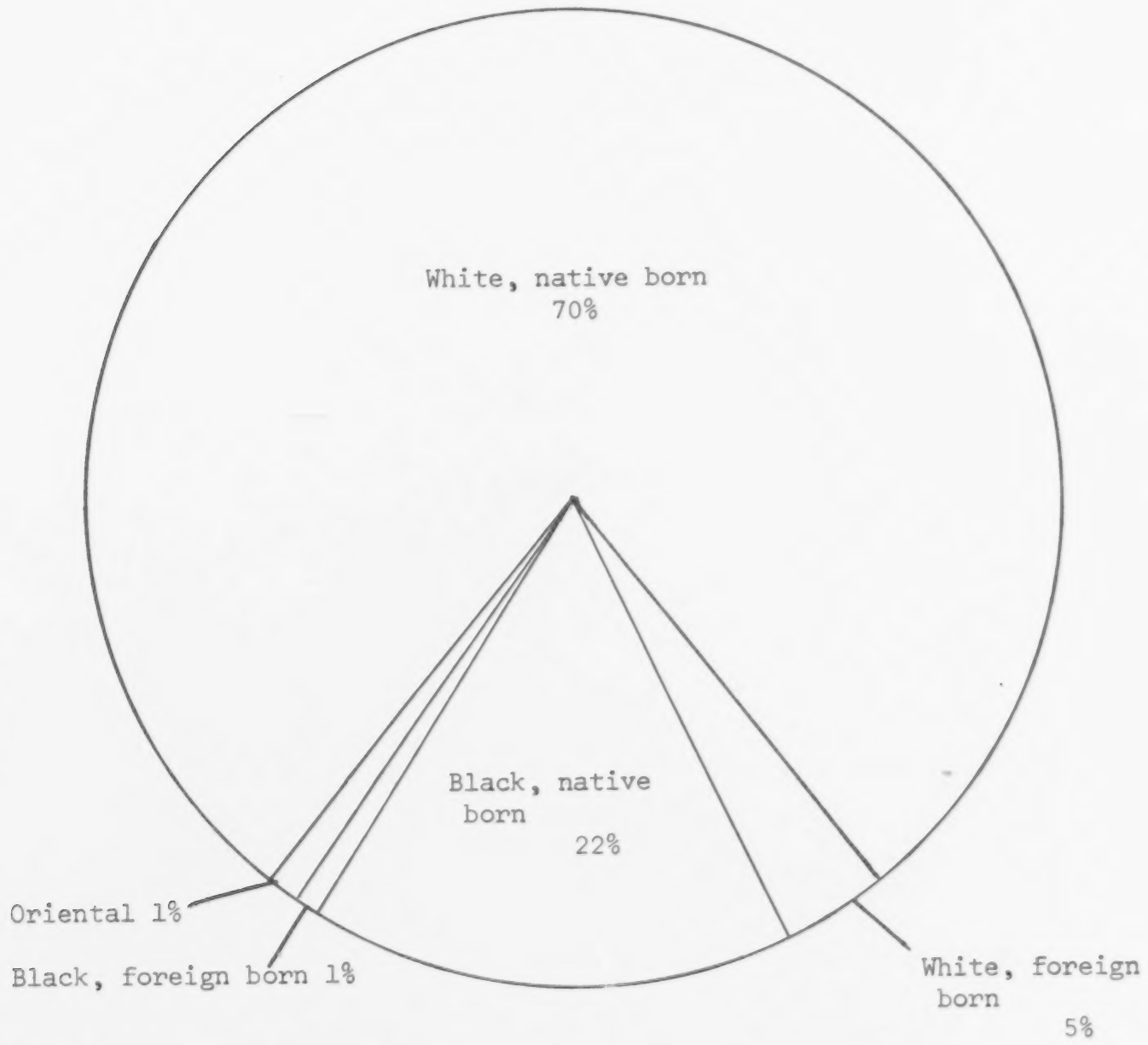
FOR THE YEARS 1968-69 and 1969-70

Grade	Pretest 1969	Pretest 1970	Posttest 1969	Posttest 1970	PAMG 1969	PAMG 1970	AMG 1969	AMG 1970
1	1.4	1.5	1.7	1.8	---	---	.3	.3
2	1.6	1.6	2.2	2.3	.5	.5	.8	1.1
3	2.2	2.0	2.9	3.0	.5	.4	.9	1.4
4	2.8	2.6	3.6	3.6	.6	.4	.9	1.3
5	3.9	3.3	4.8	4.5	.7	.6	1.1	1.6
6	4.6	5.0	5.3	6.1	.7	.8	.9	1.6
7	5.3	4.4	6.5	6.0	.7	.6	1.3	2.2
8	6.2	5.4	7.0	7.1	.7	.6	1.2	2.4
9	6.9	6.1	8.4	7.5	.8	.7	1.7	3.5
10	7.8	9.0	9.4	10.0	.7	.8	2.4	1.8
			average:		.7	.6	1.2	1.9
			median:		.7	.6	1.9	1.6

Source: Title I, Elementary and Secondary Education Act in Rhode Island - Fifth Annual Evaluation/Fiscal Year 1969-70, published by the Rhode Island State Agency for Elementary and Secondary Education. p. 48.

RHODE ISLAND - TABLE 3

RACIAL CHARACTERISTICS OF TITLE I ENROLLEES, FY-70
N = 16,843



Source: Title I, Elementary and Secondary Education Act in Rhode Island - Fifth Annual Evaluation/Fiscal Year 1969-70, published by the Rhode Island State Agency for Elementary and Secondary Education. p. 13,

APPENDIX F

Texas

A. Does Compensatory Education Work?

In 1970-71 more than 1,000 of Texas' 1200 school districts participated in compensatory education programs. In order to evaluate compensatory education programs a representative sample of 243 districts containing 1,438,820 pupils=51.3% of the total State enrollment in public elementary and secondary schools was selected for intensive review.

A total of 67,777 pupils participated in compensatory reading programs. (Table 1) Grades 2 through 8 accounted for 50,422 (74.4%) of these pupils. Pre-test and post-test standardized reading scores exist for 11,064 (22%) of these elementary pupils. (Table 2) Further, the sample was divided by size of district with "large" districts defined as those with an average daily attendance of 17,000 or more. The remaining districts in the sample are described as medium in size. The average monthly gain in reading scores between the pre-tests and post-tests was 0.8 for both large and small districts in the sample. This is slightly above the national norm of 0.7 average monthly gain for untreated disadvantaged children but below the national norm of 1.0 per month gain for average children.

An examination of monthly gains by grade for each sample group shows that 5,177 (47%) of the tested pupils gained at a rate which exceeds the typical upper norm of 0.7 for disadvantaged children. Thirty-three percent gained at a rate of 0.7, and the remaining 20% at lower rates.

B. Is there a relationship between cost/intensity and probability of success?

The per pupil expenditure for compensatory reading programs was quite different for the two sample groups (Table 3). Large districts spent $170 per pupil while medium districts expended $234 per pupil. While there is no difference in the average gain scores for the two groups the medium sized districts were able to raise the reading achievement of pupils in grades 2 and 4 to the normal rate. This is very weak evidence since we know the problems are greater in larger cities.

C. Limitations of the Data

These are the most problematic data. The Texas Education agency concluded that the major problem areas exist in dealing with the achievement test data described above.

"Standardized test data were requested from all districts where academic programs were conducted for educationally disadvantaged pupils. The results were reported in mean grade equivalents for all pupils tested in a particular subject area. However, due to numerous problems, the information was very difficult to use in a statewide analysis of the effectiveness of the programs. Districts were not provided guidelines for selecting standardized tests for these programs. Results received were from a wide variety of tests and combinations of tests. Not all pupils were administered standardized tests. Testing periods differed from one district to another. Some tested in both the fall and spring; some only in the fall; others only in the spring. For comparison test results had to be converted to a like base which cause some distortion of the data. It can only be assumed that each pupil received instruction during the full period between test dates. In order to effectively evaluate the progress of students in these programs, attention should be directed toward uniformity in test selection and administration, and processing and reporting test results.

Both pre and post-tests were not always available; consequently, many districts did not report test results. Therefore, the effects of the programs upon many students were not adequately measured." 1/

1/ Programs for the Disadvantaged - Title I, ESEA Annual Report for 1970-1971 (p. 35) - Prepared by Texas Education Agency. Source: 17.

TEXAS - Table 1

READING (PARTICIPATION BY ETHNIC GROUPS)				
Grade Level	Spanish Surname	Negro	Other	Total
Prekindergarten	524	5	30	559
Kindergarten	1,709	398	272	2,379
1	4,494	1,824	1,268	7,586
2	4,505	1,644	2,103	8,252
3	3,874	1,827	2,269	7,970
4	3,573	1,752	2,244	7,569
5	4,199	2,101	2,008	8,308
6	3,543	3,059	1,759	8,361
7	2,323	1,896	1,703	5,922
8	1,706	1,035	1,299	4,040
9	841	527	583	1,951
10	314	286	453	1,053
11	181	226	377	784
12	117	182	308	607
Ungraded	603	33	920	1,556
Special Education	260	336	284	880
Total	32,766	17,131	17,880	67,777

Ethnic Distribution of Participants in Reading:

Spanish Surname	48.3%
Negro	25.3%
Other	26.4%

Source: Programs For The Disadvantaged - Title I, ESEA
Annual Report 1970-1971
Prepared by the Texas Education Agency

GRADE	NUMBER OF PUPILS TESTED	MEAN GAIN PER ASSUMED MONTH OF INSTRUCTION	NUMBER OF DISTRICTS
2	985	.7	5
3	1,671	.6	10
4	867	.8	8
5	969	.9	10
6	1,145	.9	8
7	35	.4	22
8	29	.7	2

READING TEST RESULTS PRESENTED IN MEAN GAINS PER ASSUMED MONTH OF INSTRUCTION

(RESULTS FROM LARGE DISTRICTS)

GRADE	NUMBER OF PUPILS TESTED	MEAN GAIN PER ASSUMED MONTH OF INSTRUCTION	NUMBER OF DISTRICTS
2	918	1.0	50
3	1,095	.7	57
4	850	1.0	61
5	973	.7	52
6	543	.6	37
7	428	.8	24
8	556	.7	27

READING TEST RESULTS PRESENTED IN MEAN GAINS PER ASSUMED MONTH OF INSTRUCTION

(RESULTS FROM MEDIUM DISTRICTS)

Source: Programs for the Disadvantaged - Title I, ESEA
Annual Report 1970-71
Prepared by the Texas Education Agency

TEXAS - Table 3

PER PUPIL EXPENDITURE FOR COMPENSATORY PROGRAM INSTRUCTION		
	MEDIUM DISTRICTS	LARGE DISTRICTS
English Language Arts	$232	$142
Reading	234	170
Mathematics	105	186
Enrichment Activities	44	9

PERCENT OF TOTAL SAMPLE PARTICIPANTS WHO RECEIVED INSTRUCTION IN EACH SUBJECT	
SUBJECT AREA:	
English Language Arts	24.2
Reading	30.5
Mathematics	10.9
Enrichment Activities	18.6
Other Instructional Areas	12.6

Source: Programs for the Disadvantaged - Title I, ESEA
Annual Report 1970-71
Prepared by the Texas Education Agency

APPENDIX G

WISCONSIN

Issue: Does Compensatory Education Work?

The Fiscal Year 1971 Wisconsin annual evaluation of Title I projects is the most comprehensive in terms of cognitive data for the state. Average monthly gains of Title I pupils exceeded .1 grade equivalents (GE) per month in both reading and arithmethic compared with the .07 GE/month which is the normal for disadvantaged pupils. A 20% random sample of projects was drawn for both reading and mathematics; however, the reading sample is probably more representative because it contained 3,440 pupils showing an average grade equivalent per month gain of .1144 while the math sample contained 574 pupils showing an average grade equivalent per month gain of .15. (See Tables 1 and 2 for reading and math achievement chart summaries by grade.)

A more adequate description of reading achievement is displayed in Table 3 showing the number of pupils in varying ranges of achievement levels; 69% of all the pupils sampled were in programs where the average rate of achievement for their grade level equaled or exceeded .09 GE/month. The average per pupil expenditure for the reading sample was $207.

Selected Wisconsin Site

During FY 71 the Wisconsin Research and Development Center for Cognitive Learning conducted a field test for its reading product, The Wisconsin Design for Reading Skill Development, in the first five grades of five Milwaukee inner city schools with 96% to 99% black enrollments. Four of the five schools had a substantial percent of families eligible for Title I, ranging from 22% to 37%. Program implementation called for professional staff development, aide involvement, and use of newly developed materials.

Gains in achievement at all grade levels on program embedded tests were observed, and statistically significant changes on standardized measures of work attack were observed for Grades 1 and 2, using school means within grade as the unit of analyses. Third grade children (30% Title I) in one school showed particularly dramatic gains. Prior to program implementation their mean performance was at the 5th percentile on the word analysis sub-test of the Comparative Primary Test; it was at the 22nd percentile after six months in the program. Thus, in relation to other children of the norm group children in the reading program improved.[1]

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1 Quilling, Mary R. and Otto, Wayne. Evaluation of the Work Attach Element for the Wisconsin Design for Reading Skill Development: An Interim Report on the Large Scale Field Test, Technical Report No. 207 from the Wisconsin Research and Development Center for Cognitive Learning, The University of Wisconsin, January, 1972, and information received directly from M. Quilling.

Issue: Is There a Relationship Between Cost/Intensity and Probability Of Success?

Wisconsin performed a correlation and regression analysis on the relation between the intensity of effort and reading achievement in the FY 71 state report of Title I. (See Table 4) Of interest were the results due to various adult-to-child ratios. The number of volunteers, number of parent (paid) aides and pupil/teacher ratio had low to moderate correlations with achievement gains, whereas other program attributes had little or no relationship to gain. Specifically, fewer pupils per teacher resulted in a large gain, and more volunteers or aides were associated with higher gains. "Cost" of the projects in the aggregate did not correlate with achievement, but the pupil-teacher ratio is an appropriate measure of educational resource investment intensity.

Regression toward the mean was uncontrolled, inasmuch as some projects identified Title I pupils after pretest information was in hand. Mean gains could thus have been artificially inflated.

Limitations of the Data

The 20% random sample of Wisconsin school districts in the FY 1971 Title I evaluation included mainly towns of less than 10,000 population and nearly all-white. It thereby biased the sample in terms of what kind of community was represented and included 10% of the pupils in reading projects and 5% of the pupils in math projects in the data base.

The unit of information received by the Department of Public Instruction from Title I projects was mean change in grade equivalents by grade. The State report utilized unweighted project means so that the summary statistics are project averages. Wisconsin does not have a statewide testing program; therefore, the rate of gain on different tests was reported by different LEA's.

WISCONSIN - TABLE 1

Wisconsin - Statewide Reading Summary

Grade Level	Mean Gain In GE/Month of Instruction	Standard Deviation of Mean	Standard error of mean with error correction	Number of Students	Number of Projects
First	.1127	.0646	.0167	309	15
Second	.1023	.0533	.0085	765	39
Third	.1234	.0961	.0156	701	38
Fourth	.1067	.0620	.0108	497	33
Fifth	.1203	.0508	.0927	439	30
Sixth	.0957	.0668	.0139	264	23
Seventh	.1209	.0464	.0140	279	11
Eighth	.0900	.0517	.0172	96	9
Ninth	.1733	.1358	.0784	32	3
Tenth	.1467	.1332	.0769	55	3
Eleventh	.2300	-	-	3	1
Twelfth	N/A	N/A	N/A	None included	
Total				3,440	

SUMMARY

Although the average rate of achievement for all projects was above an expected rate of achievement[1], the large standard deviation values for the average rate at each grade level show this average rate per grade level score to have little descriptive value. For example, in grade level 3, scores within 1 standard deviation of the mean range from .05 GE/month to .16 GE/month. To more adequately describe the achievement of students test scores were tabulated in ranges showing the number of students who participated in programs for which the average rate of achievement by grade level was; .00-.04, .05-.08, -.09 and .10 or more grade equivalents per month. This tabulation showed that a majority of students (69.3%) took part in programs for which the average rate of achievement for their grade level equaled or exceeded .09 grade equivalents per month.

1.10 Grade Equivalent Per Month is taken as an expected level of achievement. .1144 equaled the average rate of achievements for all programs.

Source - Wisconsin Annual Evaluation Report Title I, ESEA, FY 1971, 15,17.

WISCONSIN - TABLE 2

Wisconsin - Statewide Mathematics Summary

Grade Level	Mean Achievement Rate	Standard Deviation of Mean	Standard Error of Mean with Error Correction	Number of Students	Number of Prjects
First	.1467	.1349	.0551	118	6
Second	.1488	.0917	.0324	150	8
Third	.1700	.0838	.0296	113	8
Fourth	.1583	.1049	.0423	93	6
Fifth	.1700	.1273	.0636	64	4
Sixth	.2850	.2051	.1450	12	2
Seventh	.1700	–	–	7	1
Eighth	.1300	.0141	.0100	7	2

Total ---------- 574

.10 Grade Equivalent Per Month is taken as an expected rate of gain of achievement level. .15 equaled the average rate of achievement for all programs.

Source: Wisconsin Annual Evaluation Report Title I, ESEA, FY 1971 p.28

WISCONSIN TABLE 3

READING ACHIEVEMENT

Range = Number of Grade Equivalents Per Month

	.00-.04		.05-.08		.09		.10-7		Total at .09 or greater	
Grade	Children	Proj.	Children	Proj.	Children	Proj.	Children	Proj.	Children	Proj.
1	12	3	4	1	8	1	285	10	293	11
2	21	3	168	12	289	8	287	16	576	24
3	35	4	198	11	91	2	377	21	468	23
4	86	4	148	9	109	5	154	15	263	20
5	4	1	147	7	39	3	249	19	288	22
6	38	6	65	3	60	5	101	9	161	14
7	2	1	7	1	0	0	270	9	270	9
8	5	1	66	4	11	1	14	3	25	4
9	0	0	0	0	3	1	29	2	32	3
10	0	0	50	2	0	0	5	1	5	1
11	0	0	0	0	0	0	3	1	3	1
12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	.203		853		610		1774		2384	
% of Total	5.9%		24.8%		17.7%		51.6%		69.3%	

Source - Wisconsin Annual Evaluation Report Title I, ESEA, FY 1971, p. 18

WISCONSIN - TABLE 4

Wisconsin Title I Correlation Between Intensity of Effort and Probability of Success

Variable Name	Coefficient of Multiple Correlation	Coefficient Of Determination	Significance Level	Number of Variables in the Equation
Parent Aides	.4310	.1857	.003	2
Pupil/Teacher Ratio	.5964	.3557	.002	3
Cost	.6034	.3641	.459	4
Percent Low Income	.6104	.3726	.460	5
Interest	.6141	.3771	.597	6
Inservice Teachers	.6194	.3837	.521	7
Reading Instruction	.6221	.3870	.652	8
Percent in Reading	.6248	.3904	.656	9
Length of Instruction	.6277	.3940	.645	10
Volunteers	.6277	.3940	.973	11

ANALYSIS OF VARIANCE SUMMARY TABLE WITH TWO VARIABLES (PARENT AIDES AND PUPIL/TEACHER RATIO)

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square
Linear Regression	425.84810	2	212.92405
Residuals from Regression	771.45625	43	17.94084
Corrected Total	1197.30435	45	

F Ratio = 11.87
Significance Level = .0001

Source - Wisconsin Annual Evaluation Report - Title I, ESEA, FY 1971, P. 24

APPENDIX H

463-590 O - 72 - 3

Description of the Study	Achievement Results	Relationship Between Const/Intensity & Achievement Gain	Comment
North Dakota State Annual Evaluation of Title I - FY 70 Sample of 30 Title I reading projects reporting achievement data from one of three standardized tests	Type of Test / # Pupils / Aver. GE Gain Gates-MacGinitie: 380 pupils, 1.26 SRA: 353 pupils, .76 ITBS: 210 pupils, .83		Test scores are presented by grade level in the report. Gains generally decreased as the grade level increased. Many small LEA's are served by Title I. No information is presented on the characteristics of the Title I pupils showing achievement gains.
Oregon State Annual Evaluation of Title I - FY 70 Sample of 31% of all regular year Title I participants and 11% of summer Title I participants. Percentiles on four standardized achievement tests are given.	Regular Year Reading: Type of Test / Mean Pre-Test Percent. / Mean Post-Test Percent. Stanford: 22.7 / 34.9 Metropolitan: 39.7 / 56.1 Gates: 25.9 / 36.2 Calif.: 25.9 / 35.2 Summer Term Reading: Mean Pre-Test Percent. / Mean Post-Test Percent Stanford: 23.5 / 26.8 Metropolitan: 33.1 / 44.0 Gates: 22.1 / 26.3 Calif.: 45.9 / 51.8		Test scores are not presented by grade level. Both regular and summer projects showed percentile improvements with greater gain shown by the full year program.
Wyoming State Annual Evaluation of Title I - FY 70 Achievement data on three standardized tests for a sample of 2,217 pupils in grades 3-8 are presented.	Type of Test / # Pupils / Aver. GE Gain Stanford: 655 pupils, .79 ITBS: 1,287 pupils, .86 Gates-MacGinitie: 275 pupils, .92		Gains are presented by grade level, pre and post-test status is not shown
Arkansas State Annual Evaluation of Title I - FY 70 - Random sample of elementary and secondary pupils: Sample from population: Elem. pupils 12,562; Sec. Pupils 7,927 # Title I: 3,996; 2,054	Percentage based on Title I children only Post Test Reading Level / Elem. Pupils / Sec. Pupils 1 + yr. below grade: 45% / 65% 2 + yr. below grade: 16% / 17% at or above grade: 23% / 22%		Post test data shows that a higher percentage of the Title I children than the national norm are still achieving below grade level. The lack of pre-test information precludes any determination of rate of improved achievement within this known group of low achievers.

State Reports: Brief Summaries

Description of the Study	Achievement Results			Relationship Between Cost/Intensity & Achievement Gain	Comment
Louisiana - FY - 69 Percentile distributions (Reading Achievement) 70,263 (pre) and 73,707 (post) Title I students by grade for 23 LEA's		Pre-Test	Post Test		
	% of students in lowest Quartile	53%	47%		
	% of students in lowest percentiles	34%	31%		
Louisiana FY 70 Percentile distributions (Reading) for 86,037 (pre) and 88,897 (post) Title I students by grade and LEA. Similar studies for math, science and social studies are not summarized here.		Pre	Post		
	% of students in lowest quartile	50%	50%		
	% of students in lowest 12 percentiles	31%	30%		
Louisiana FY 71 Same as FY 70 except the Reading tests covered 39,974 (pre) and 40,089 (post) Title I students. Estimated total Title I reading program 94,825.		Pre	Post	Average PPE for Reading $64.00	Primary factors affecting analysis of summary data 1. School districts lacked uniformity in the kinds of tests administered. 2. Pre and Post testing not always done during same school year
	% of students lowest quartile	53%	54%		
	% of students in lowest 12 percentiles	35%	33%		
	% of students performing at or above grade level	45%	47%		
Ohio FY 69 Test sample includes an apparently representative group of 84,525 Title I children	Number and % of Pupils by Gain Rate for Communication Skills-Grades 1-12			Average PPE for Communication Skills $249	
		Gain Greater than 1.0	Gain less than 1.0		
	# of Pupils	52,793	31,732		
	% of Pupils	63%	37%		

Description of the Study	Achievement Results	Relationship Between Cost/Intensity & Achievement Gain	Comment
Ohio FY 70 Standardized tests in reading and language arts test results reported for 85,464 Title I children.	Number and % of pupils by Gain Rate for Reading and Language Arts Pre-K - 12th Grade Gain Greater than 1.0: # of Pupils 46,443; % of total 54% Gain Less than 1.0: # of Pupils 39,121; % of total 46%	Average PPE for Reading/Language Arts: $226	Total participants in reading and language arts reported as 79,725 although 85,464 tests reported. Some children were evidently tested in more than one program.
Minnesota State Annual Evaluation of Title I - FY 69 Randomly selected samples of regular school year and summer school Title I program participants-193 pupils in basic skills sample 1,630 pupils in reading sample	Basic Skills Gain GE/Month ≥.10: # Pupils 75; % 39% No gain: # Pupils 30; % 16% Reading - Gain GE/Month ≥.10: # Pupils 895; % 55% No gain: # Pupils 120; % 7%		No pre-test or post-test status measures are given nor is there a breakdown by grade level.
New Jersey State Annual Evaluation of Title I - FY 70	Percentage of Pupils who gained in GE/Month ≥ .10 Grade 2: Reading 73%, Math 53%, Compre. Total 50% Grade 4: Reading 61%, Math 57%, Compre. Total 44% Grade 6: Reading 59%, Math 67%, Compre. Total 56%		No pre-test or post-test status scores are presented nor are mean gain scores given.

Description of the Study	Achievement Results	Relationship Between Cost/Intensity & Achievement Gain	Comment
New Mexico - FY - 70 Random sample of pre-post score gains reported by grade. The number of districts supplying data ranged from 3 (grade 12) to 38 (grade 4). The total number of children tested is unknown although all are Title I participants.	Average Reading Improvement in Grade Equivalency 0.9 The improvement by grade for all grades except grade 10 ranged from 0.9 to 1.2 The improvement for grade 10 - 0.4		See sample limitation in description of study (1st column)
New Mexico/FY - 71 Total Estimated Title I Participants 54,041 Reading and Language Arts - approximately 50% Mathematics - aporox.8% Universe tested is unknown	Average Reading Gain by % of LEA's Participating in Language Arts Programs Gain / Year ≥1.1 / 0.6-1.0 / ≤0.6 % of LEA's 44% / 39% / 17% Average Math Gain by % of LEA's Participating in Math Program Gain / Year ≥1.1 / 0.6-1.0 / ≤0.6 % of LEA's 31% / 54% / 15.2		No description of test used nor of total universe of children nor tested sample of children.

Description of the Study	Achievement Results	Relationship Between Cost/Intensity & Achievement Gain	Comment
Michigan - FY 71 Annual Evaluation Report 133,744 Title I Students with 66% in grade K-6 44% in school year only 26% in summer only 30% in school year and summer	Frequency of Level of GEU Gains in Mathematics by grade Group: School Year Components Level of GEU Gain Grade Group / Less than .5 / .5-1.0 / 1.0 or Greater / Total 1-6: 11 / 55 / 15 / 61 7-8: 4 / 5 / 1 / 10 9-12: 0 / 0 / 0 / 0 Total: 15 / 40 / 16 / 71 Frequency of Level of GEU Gains in Reading by Grade Group: School Year Components Level of GEU Gain Grade Group / Less than .5 / .5-1.0 / 1.0 or Greater / Total 1-6: 87 / 226 / 213 / 526 7-8: 10 / 25 / 28 / 63 9-12: 4 / 4 / 20 / 28 Total: 101 / 255 / 261 / 617		Data not available on number of students in each group.

Description of the Study	Achievement Results	Relationship Between Cost/Intensity & Achievement Gain	Comment
Iowa - (FY 69) - Title I Basic Skills a. 18,000 pupils with matched achievement test scores b. Sample of 1960 tested for reading comprehension	a. Overall year's achievement in basic skills during one year of school was .8/year. b. Overall gain in reading achievement was .9 for the year.		
Missouri (FY 69) 15,00 pupils with pre and post test reading scores for Title I participants in Grades 1-12.	Mean gain in achievement was .8 for one year of schooling.	$156	Four different standarized tests used
Kansas FY 71 Kansas Annual Evaluation Report 63,189 Title I participants 43,138 in grades 2-8 Almost 27% of all Title I participants are minority with Negroes about 21% of the total.	California Achievement Test, Total Reading (8 months between pre-test and post-test) Grades: 2-8; # Pupils: 1537; Months mean Gain Pre-test to Post-Test: 8.9 Gates-MacGinite Reading Test (8 months between pre-test and post-test) Grades: 2-8; # Pupils: 1254; Months mean Gain Pre-test to Post-Test: 10.7 Metropolitan Reading Test (8 months between pre-test and post-test) Grades: 2-8; # Pupils: 633; Months mean Gain Pre-test to Post-Test: 7.7 Stanford Achievement Test (Reading) (8 months between pre-test and post-test) Grades: 2-8; # Pupils: 1594; Months mean Gain Pre-test to Post-Test: 8.2		

Description of the Study	Achievement Results	Relationship Between Cost/Intensity & Achievement Gain	Comment
Indiana State Title I Evaluation Report FY '70	Achievement data presented in the FY '70 Indiana report are presented in almost every conceivable format and cannot be summarized in any meaningful way. Results are presented separately for five regional areas. Within areas some data are broken down by grade level and some are not. Some subgroups are represented by posttest scores only, others by both pre and posttest scores. Scores are sometimes reported in raw-score form, other times by various types of standardizations, percentiles, and grade equivalents. Sometimes differences between pre and posttest scores are statistically evaluated, other times they are not. There are both positive and negative findings with respect to Title I success with the balance apparently on the side of success.		

APPENDIX I

Los Angeles City Unified School District

Issue: Does Compensatory Education Work?

The Los Angeles City Unified School District is the largest school district in the United States and undertakes annual evaluations of Title I using pre-treatment and post-treatment achievement data for reading and mathematics. There are at least three major and separate compensatory efforts in reading for disadvantaged children being tried at present. Achievement data results are now available for two of these efforts and these will be discussed in turn. Without question, the challenge in providing compensatory help to disadvantaged children is larger in the urban setting.

Title I Schools

The district enrolls 54,000 elementary pupils in Title I reading and mathematics programs. [1]

The 55 Title I elementary schools in Los Angeles include the most disadvantaged children in the city and we are informed that they are among the most disadvantaged in the state. There are many more schools with significant proportions of Title I eligible children but these 55 schools are those enrolling the children judged to have the most severe learning problems.

In this setting compensatory education has been less successful than in the state as a whole. In the elementary grades only 17% to 32% of the children in the Title I schools made achievement gains greater than .7 years per year of instruction (see Los Angeles, Table I)

LOS ANGELES TABLE I

Achievement Gains In Reading For Pupils Receiving Compensatory services in LAUSD Title I Elementary Schools: 1969-71 [2]

	Schools			Children		
	Total	Proportion with gains greater than .7		Total number by grade	Number	Proportion with gains greater than .7/year
		#	%			
Grade 2	55	11	20.0	7,643	1,316	17.2
Grade 3	55	14	25.5	7,815	1,918	24.5
Grade 5	55	18	32.7	7,144	2,179	30.5
Grade 6	55	17	30.9	6,892	2,206	32.0

1/ Source: 51 p. 3

2/ Source: 51 p. 62

Another way of looking at these results is to compare the outcomes for grades as a whole. For the two years, 1969-71, no grade met the district objective of an overall gain of one year per year of school (see Table LA II below). The best that can be said is that 7 of 12 reading cases showed overall gains for the ingrades above. .7 year per yer of instruction.

In arithmetic five grades came up to the level of 1 year per year of instruction gain and 7 of the 8 cases presented showed gains of .7 per year of greater (see following, Los Angeles, Table II).

TABLE: LOS ANGELES II

- Comparison of Test Scores and Gains
In All 55 Title L Elementary Schools, 1969-70 and 1970-71

READING

Grade	Year	Pre GE*	Post GE*	Difference	Objective	GE for 50th %ile on Test	Yrs/Mos Below Grade
1	'69-70		1.8	(0.8)	(0.8)	1.8	0.0
1	'70-71		1.7	(0.7)	(0.8)	1.8	-0.1
2	'69-70	1.5	2.0	0.5	1.0	2.8	-0.8
2	'70-71	1.8	2.1	0.3	1.0	2.8	-0.7
3	'69-70	1.9	2.8	0.9	1.0	3.8	-1.0
3	'70-71	2.0	2.6	0.6	1.0	3.8	-1.2
4	'69-70	2.9	3.8	0.9	0.7	4.8	-1.0
4	'70-71	2.8	3.5	0.7	0.8	4.8	-1.3
5	'69-70	3.3	4.1	0.8	0.7	5.8	-1.7
5	'70-71	3.5	4.1	0.6	0.8	5.8	-1.7
6	'69-70	3.8	4.7	0.9	0.6	6.8	-2.1
6	'70-71	4.0	4.6	0.6	0.7	6.8	-2.2

ARITHMETIC

Grade	Year	Pre GE*	Post GE*	Difference	Objective	GE for 50th %ile on Test	Yrs/Mos Below Grade
3	'69-70	1.9	3.0	1.1	0.7	3.8	-0.8
3	'70-71	2.0	3.0	1.0	0.8	3.8	-0.8
4	'69-70	2.8	3.9	1.1	0.7	4.7	-0.8
4	'70-71	2.6	3.6	1.0	0.8	4.7	-1.1
5	'69-70	3.5	4.6	1.1	0.7	5.7	-1.1
5	'70-71	3.5	4.4	0.9	0.8	5.7	-1.3
6	'69-70	4.5	5.2	0.7	0.6	6.7	-1.5
6	'70-71	4.5	5.1	0.6	0.7	6.7	-1.6

*Grade Equivalent (GE) based on median raw scores
Grades 1-3 in Reading - All pupils
All others - Matched

Source: 51

Comparison group analysis

For junior high and high school pupils the district has undertaken further detailed analysis. This compares achivement results for pupils with and without compensatory services in reading and mathematics for children matched on the basis of Intelligence Quotient and for some analyses by ethnicity.

Los Angeles, Table III

Overview of results for comparison of reading and mathematics achievement gains attained by matched pupils with and without compensatory services

All junior high pupils	Total Achievement Categories	Number of categories in which Title I Pupils showed higher gain rate	Number of Categories in which Title I Pupils reached higher Absolute Achievement Levels
All Junior High Pupils	11	6	11
Black Junior Junior High Pupils	11	10	11
Brown Junior High	11	7	9
All Senior High Pupils	11	6	8
Black Senior High Pupils	11	6	9
Brown Senior High pupils	11	5	1

Source:51 Tables 52-63 pp. 155-166

This overview illustrates two conclusions from the data:

> pupils with compensatory services scored higher in absolute achievement levels than their IQ comparison groups in the overwhelming proportion of cases; the major exception is brown senior high school pupils;
>
> black senior and junior high pupils receiving compensatory services showed a greater incidence of faster gain and higher absolute achievement levels than the total group in the matched comparisons.

In some of these cases there are large differences in rate of gain and absolute achievement between the pupils with compensatory education and those without and in others the differences are small or moderate. What should be remembered is that the pupils with the compensatory services are more economically disadvantaged than those without in this comparison and this suggests, given the matching of IQ, that compensatory assistance has been moderately successful.

Los Angeles Demonstration Program in Reading and Mathematics

This program involved intensive mathematics and reading instruction targeted to 2,000 8th grade low-achieving, low income, largely minority group students in three junior high schools. The special training to raise pupil achievement through prescriptive teaching began in February, 1970, and has continued with the same pupils through 1970-71. Evaluation methodology consisted of the analysis of standardized tests of reading and arithmetic achievement (Comprehensive Tests of Basic Skills) which were administered to comparison pupils of similar ethnicity and program eligibility. The achievement results can be summarized in the following manner for the three junior high schools:

LOS ANGELES TABLE IV[1]

School	Number of 8th grade pupils	Vocabulary	Arithmetic	Reading Comprehension
a	650		pupils surpassed comparison pupils w/ significant gains	
b	600	pupils scored significantly higher than comparison	comparison groups scored significantly higher	comparison groups scored higher
c	750	scores were higher than comparison	all scores were higher than comparison	scores were higher than comparison

[1]Evaluation Report AB938 Demonstration Program in Reading and Mathematics, 1970-71, Los Angeles Unified School District, Source: 44

Instructional objectives of 10 months gain for 8 months instruction were met or exceeded in 10 of 25 possible conditions - varied by group and subtest. In terms of annual grade equivalent this appears to mean gains of 1.25 years per year of instruction.

APPENDIX J

Sacramento, California

Issue: Does Compensatory Education Work?

A major evaluation of Title I activities and achievement has been conducted by Sacramento, California, for the school year 1970-71. "The findings of this evaluation indicate real progress has been made in raising the achievement of disadvantaged pupils especially of integrated pupils in the Project Aspiration schools."1/ Title I activities were concentrated on six elementary "saturated" schools and two non-public elementary schools received limited services; Project Aspiration was another Title I area of activity and involved 23 receiving schools. Various standardized achievement tests, including Metropolitan Readiness Test and California Achievement Test, were administered to these children and analyzed.

The objectives for the six saturated schools were stated in achievement gain terms. The evaluation presents evidence which shows that compensatory programs and services in these schools were effective in improving pupil performance in reading and math. "In most cases, pupil performance exceeded anticipated performance as stated in the performance objectives established for the project, and while pupils may not be achieving at 'grade level' in all placement levels, the increased percentile rankings indicate that they are moving toward the norm population."2/ Table 1 summarizes the reading achievement results measured for 1,272 children in grades 1-6. The objective of 7.5 months growth for 7.5 months was realized between pre and post-tests for the children in this analysis. Table 2 summarizes the math achievement results measured for 1,356 children in grades 1-6. Again, the objective of 7.5 months growth was met for all grade-placement levels, except for grade 5 which reached a median gain of 7 months; this was equal to the number of months instruction between pre and post-tests.

Project Aspiration was "designed to alleviate the adverse effects of de facto segregation and to provide integrated educational experiences for many children in the district."3/ The program involved the reassignment of approximately 1,600 elementary pupils from six de facto segregated schools to twenty-three receiving schools; and the objectives were stated in achievement gain terms as well as providing ethnically integrated educational experiences. Tables 3 and 4 present the summary of evidence that the stated objectives for reading and math were achieved. The project was effective in promoting improved pupil

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1/ Focus on Reading and Mathematics: An Evaluation Report on a Program of Compensatory Education, ESEA, Title I, Sacramento City Unified School District, July 1971, forward. Source: 61.

2/ Ibid., p. 123.

3/ Ibid., p. 161.

performance in reading at placement (grade) levels 1-6 (i.e., above 7 months growth for 867 children) and in math achievement at placement levels 2-6 (i.e., above 7 months growth for 917 children.) While the pupils may not be achieving at "grade level" at all levels, the increased percentile rankings indicate they are catching up with the norm.

Limitations of the Data

The achievement data and changes in pupil behavior could not be related to specific services or activities provided by the Title I support and thereby were considered in terms of the total programs.

Source: 61 p. 78 Sacramento: Table 1

SATURATED ELEMENTARY SCHOOLS

DISTRIBUTION OF PUPILS IN SIX SATURATED ELEMENTARY SCHOOLS ACCORDING TO MONTHS OF READING ACHIEVEMENT GROWTH FROM OCTOBER 1970 TO MAY 1971
BY PLACEMENT (GRADE) LEVEL

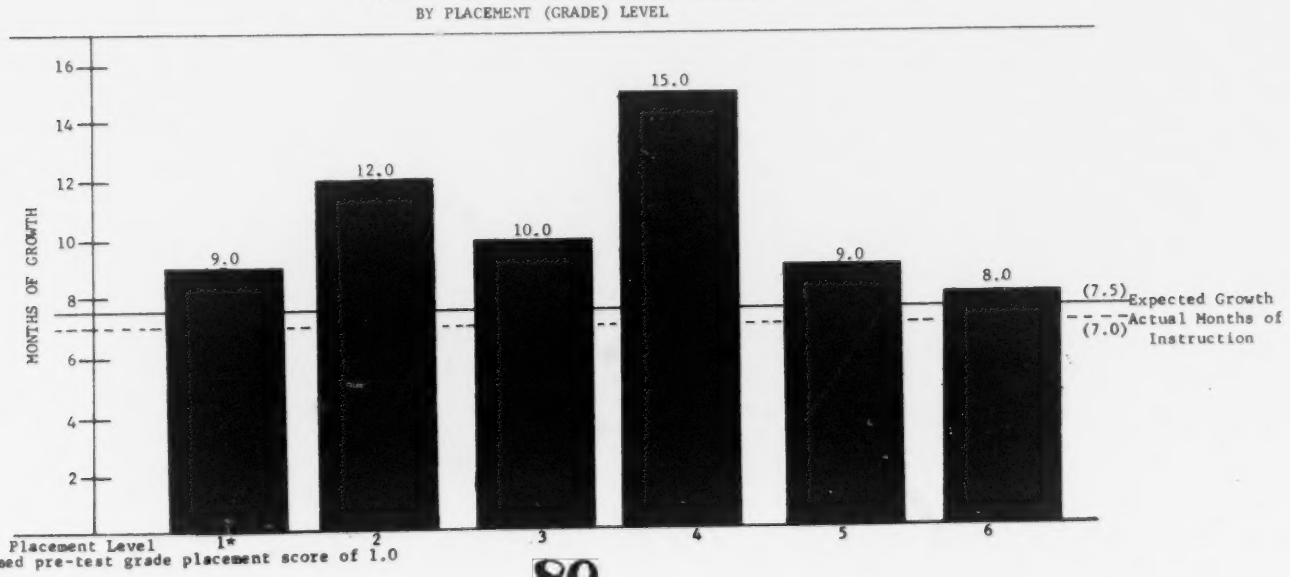
CALIFORNIA ACHIEVEMENT TEST - TOTAL READING

Months of Growth	Distribution of Pupils											
	Grade 1*		Grade 2		Grade 3		Grade 4		Grade 5		Grade 6	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Above 33			1	0.4			3	2.0			1	0.5
33			1	0.4			2	1.3			1	0.5
32							1	0.7				
31												
30												
29					1	0.4	2	0.3				
28	1	0.4					1	0.7			1	0.5
27	5	1.9					2	1.3	1	0.5	1	0.5
26	3	1.2	1	0.4			3	2.0				
25			2	0.8			3	2.0	2	1.0	1	0.5
24	4	1.5	1	0.4			4	2.6	3	1.5	1	0.5
23	4	1.5	1	0.4	2	0.9	6	3.8	1	0.5		
22	6	2.3	5	2.0	1	0.4	6	3.8	1	0.5	2	1.1
21			5	2.0			3	2.0	1	0.5		
20	4	1.5	8	3.2	1	0.4	3	2.0	6	3.0	3	1.6
19	12	4.6	11	4.5	1	0.4	10	6.5	5	2.5	2	1.1
18	5	1.9	6	2.4	2	0.9	9	5.8	5	2.5	1	0.5
17	7	2.7	9	3.7	4	1.8	8	5.2	7	3.5	2	1.1
16	5	1.9	9	3.7	9	4.0	10	6.5	4	2.0	4	2.1
15	12	4.6	11	4.5	11	4.8	7	4.6	10	5.1	3	1.6
14	8	3.1	21	8.6	7	3.1	7	4.6	15	7.6	5	2.6
13	11	4.2	19	7.7	22	9.7	2	1.3	5	2.5	12	6.3
12	8	3.1	19	7.7	21	9.3	10	6.5	13	6.6	12	6.3
11	11	4.2	17	6.9	17	7.5	5	3.3	4	2.0	9	4.7
10	14	5.4	17	6.9	22	9.7	5	3.3	14	7.1	12	6.4
9	19		21	8.6	24	10.7	3	2.0	14	7.1	18	9.5
8	20	7.7	15	6.1	13	5.7	6	3.8	16	8.2	11	5.8
7	31	1.9	12	4.9	16	7.0	6	3.8	12	6.1	12	6.3
6	16	6.2	10	4.0	17	7.5	7	4.6	13	6.6	12	6.3
5	16	6.2	10	4.0	13	5.7	6	3.8	10	5.1	13	6.8
4	12	4.6	6	2.4	8	3.5	3	2.0	6	3.0	12	6.3
3	8	3.1	4	1.6	4	1.8	5	3.3	7	3.5	10	5.3
2	10	3.8	1	0.4	5	2.2	1	0.7	5	2.5	10	5.3
1	7	2.7	1	0.4	1	0.4	1	0.7	6	3.0	7	3.7
0	1	2.4			2	0.9	2	1.3	5	2.5	3	1.6
- 1					2	0.9	1	0.7	1	0.5	2	1.1
- 2					1	0.4			3	1.5		
- 3									1	0.5	2	1.1
- 4											1	0.5
- 5											1	0.5
- 6												
- 7											1	0.5
- 8									1	0.5	1	0.5
- 9											1	0.5
-10 or lower									1	0.5		
No. of Pupils	260	100.0	244	100.0	227	100.0	153	100.0	198	100.0	190	100.0
Median	9.0		12.0		10.0		15.0		9.0		8.0	

*Assumed pre-test grade placement score of 1.0

SATURATED ELEMENTARY SCHOOLS--CHART 2

MEDIAN MONTHS OF GROWTH IN READING ACHIEVEMENT FOR PUPILS IN SIX SATURATED ELEMENTARY SCHOOLS
BY PLACEMENT (GRADE) LEVEL



*Assumed pre-test grade placement score of 1.0

Sacramento: Table 2

Source: 61 p. 94

SATURATED ELEMENTARY SCHOOLS

DISTRIBUTION OF PUPILS IN SIX SATURATED ELEMENTARY SCHOOLS ACCORDING TO MONTHS OF ARITHMETIC ACHIEVEMENT GROWTH FROM OCTOBER 1970 TO MAY 1971 BY PLACEMENT (GRADE) LEVEL

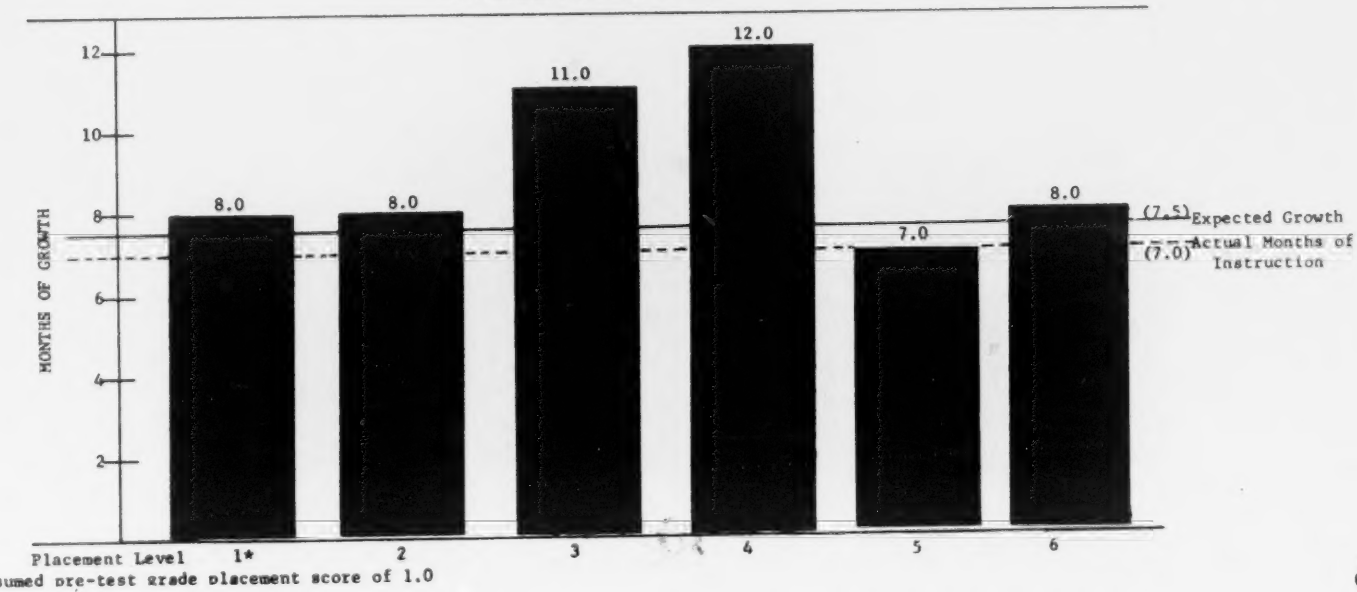
CALIFORNIA ACHIEVEMENT TEST - TOTAL ARITHMETIC

Months of Growth	Distribution of Pupils											
	Grade 1*		Grade 2		Grade 3		Grade 4		Grade 5		Grade 6	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Above 33											1	0.5
33	2	0.6										
32	5	1.5										
31	5	1.5										
30	4	1.2			1	0.5						
29	9	2.7										
28	7	2.1					1	0.5				
27	11	3.3										
26	6	1.8					2	1.1			1	0.5
25	7	2.1	1	0.4			3	1.6	1	0.5	1	0.5
24	16	4.8					4	2.2	2	1.0		
23	17	5.1			2	1.1	1	0.5			1	0.5
22	8	2.4	1	0.4	3	1.6	6	3.2			1	0.5
21	17	5.1			2	1.1	6	3.2			1	0.5
20	25	7.7	3	1.2	3	1.6	6	3.2	2	1.0	1	0.5
19	14	4.2	1	0.4	2	1.1	3	1.6	2	1.0		
18	28	8.6	6	2.5	7	3.7	10	5.4	8	3.8	3	1.5
17	16	4.8	2	0.8	5	2.6	10	5.4	5	2.4		
16	20	6.0	6	2.5	11	5.7	7	3.8	6	2.9	2	1.0
15	31	9.5	12	5.0	10	5.3	9	4.8	6	2.9	4	2.0
14	19	5.7	11	4.5	10	5.3	11	5.9	4	1.9	6	3.0
13	18	5.4	10	4.1	16	8.4	6	3.2	9	4.3	3	1.5
12	23	7.0	15	6.3	15	7.9	14	7.6	6	2.9	15	7.5
11	13	3.5	21	8.7	10	5.3	12	6.5	15	7.3	14	7.0
10	5	1.5	9	3.7	11	5.7	9	4.8	9	4.3	20	10.1
9	4	1.2	22	9.1	13	6.8	13	7.0	18	8.6	19	9.6
8	1	0.3	25	10.3	22	11.6	11	5.9	8	3.8	19	9.6
7			32	13.2	11	5.7	6	3.2	18	8.6	19	9.6
6			15	6.3	12	6.3	8	4.3	15	7.3	12	6.0
5			17	7.0	4	2.1	2	1.1	11	5.3	9	4.5
4			14	5.8	4	2.1	5	2.7	18	8.6	19	9.6
3			8	3.3	3	1.6	3	1.6	5	2.4	6	3.0
2			6	2.5	4	2.1	3	1.6	9	4.3	2	1.0
1			3	1.2	2	1.1	4	2.2	9	4.3	4	2.0
0			1	0.4	3	1.6	3	1.6	7	3.4	8	4.0
- 1					2	1.1	2	1.1	4	1.9		
- 2							2	1.1	2	1.0	1	0.5
- 3			1	0.4			2	1.1	3	1.4	4	2.0
- 4					1	0.5			3	1.4		
- 5							1	0.5			2	1.0
- 6									2	1.0		
- 7											1	0.5
- 8									1	0.5		
- 9							1	0.5				
-10 or less					1	0.5						
No. of Pupils	331	100.0	242	100.0	190	100.0	186	100.0	208	100.0	199	100.0
Median	8.0		8.0		11.0		12.0		7.0		8.0	

*Assumed pre-test grade placement score of 1.0

SATURATED ELEMENTARY SCHOOLS--CHART 3

MEDIAN MONTHS OF GROWTH IN ARITHMETIC ACHIEVEMENT FOR PUPILS IN SIX SATURATED ELEMENTARY SCHOOLS BY PLACEMENT (GRADE) LEVEL



*Assumed pre-test grade placement score of 1.0

Source: 61 p. 191 Sacramento: Table 3

PROJECT ASPIRATION RECEIVING SCHOOLS

DISTRIBUTION OF PUPILS IN TWENTY-THREE PROJECT ASPIRATION RECEIVING SCHOOLS ACCORDING TO MONTHS OF READING ACHIEVEMENT GROWTH FROM OCTOBER 1970 TO MAY 1971 BY PLACEMENT (GRADE) LEVEL AND THE TOTAL GROUP

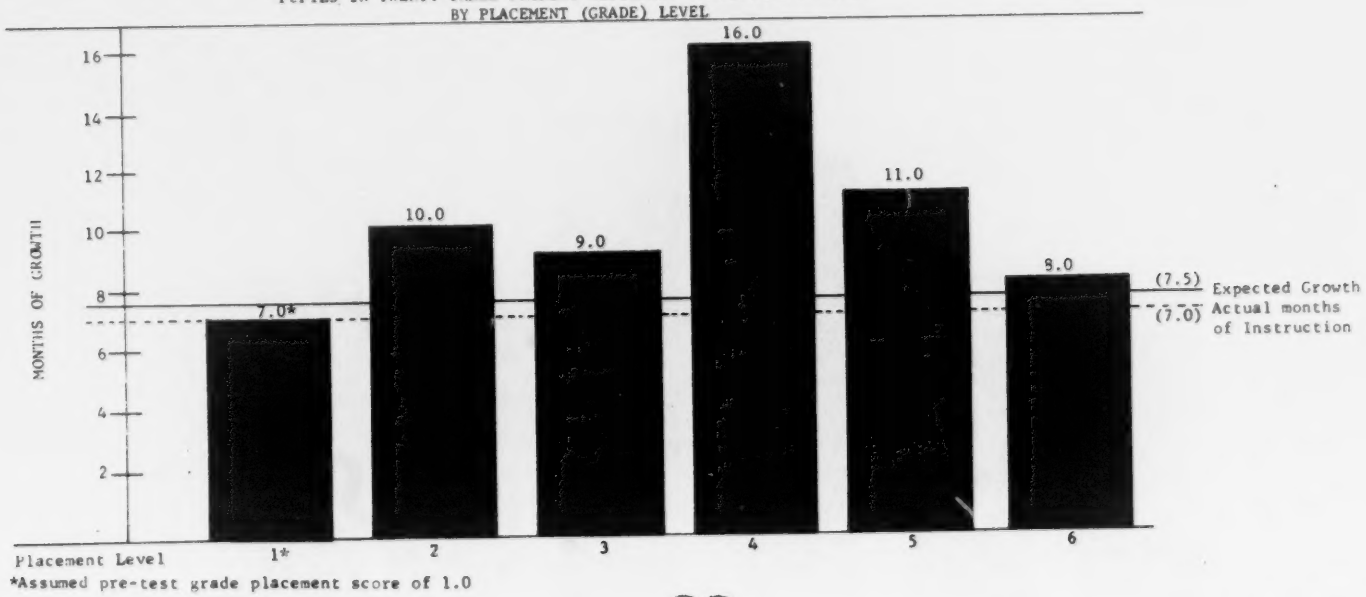
CALIFORNIA ACHIEVEMENT TEST--TOTAL READING

Months of Growth	Distribution of Pupils by Placement Level											
	Level 1*		Level 2		Level 3		Level 4		Level 5		Level 6	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Over 33							7	6.4	4	2.9	2	1.4
33									1	0.7		
32							1	0.9	1	0.7	2	1.4
31							3	2.7			1	0.7
30							1	0.9	1	0.7		
29							1	0.9				
28							3	2.7	2	1.5	1	0.7
27							2	1.8	1	0.7	2	1.4
26							1	0.9	1	0.7	2	1.4
25			1	0.7			1	0.9	1	0.7	1	0.7
24	1	0.6	1	0.7	1	0.7	4	3.7	2	1.5	2	1.4
23			3	2.0			1	0.9	2	1.5	2	1.4
22	2	1.2	1	0.7	1	0.7	2	1.8	2	1.5	2	1.4
21					1	0.7	5	4.5	2	1.5		
20					1	0.7	4	3.7	4	2.9		
19	3	1.7	3	2.0	3	2.0	8	7.3	5	3.7	2	1.4
18	2	1.2	2	1.4	2	1.3	3	2.7	1	0.7		
17	2	1.2	2	1.4			7	6.4	6	4.4	2	1.4
16	3	1.7	6	4.1	4	2.6	10	9.1	7	5.2		
15	1	0.6	6	4.1	5	3.3	5	4.5	4	2.9	4	2.8
14	1	0.6	11	7.4	3	2.0	8	7.3	7	5.2	4	2.8
13	9	5.1	8	5.4	4	2.6	1	0.9	5	3.7	8	5.5
12	8	4.5	11	7.4	7	4.6	5	4.5	5	3.7	11	7.6
11	5	2.9	12	8.1	11	7.3	6	5.5	7	5.2	5	3.5
10	17	9.6	9	6.1	16	10.6	3	2.7	7	5.2	11	7.6
9	11	6.2	11	7.4	21	13.9	3	2.7	7	5.2	8	5.5
8	17	9.6	9	6.1	11	7.3			5	3.7	10	6.9
7	15	8.5	17	11.4	27	17.9	2	1.8	7	5.2	9	6.2
6	19	10.8	7	4.7	7	4.6	4	3.7	7	5.2	11	7.6
5	9	5.1	8	5.4	8	5.3	2	1.8	7	5.2	6	4.2
4	15	8.5	7	4.7	8	5.3	1	0.9	4	2.9	4	2.8
3	11	6.2	1	0.7	3	2.0	1	0.9	5	3.7	6	4.2
2	15	8.5	6	4.1	5	3.3			4	2.9	8	5.5
1	8	4.5	3	2.0					4	2.9	6	4.2
0	1	0.6	3	2.0	2	1.3	4	3.7	2	1.5	4	2.8
-1									1	0.7	1	0.7
-2	1	0.6							1	0.7	2	1.4
-3									1	0.7	1	0.7
-4							1	0.9	1	0.7	1	0.7
-5											1	0.7
-6											1	0.7
-7												
-8									1	0.7	1	0.7
-9									1	0.7		
-10 or less												
No. of Pupils	177	100.0	148	100.0	151	100.0	110	100.0	136	100.0	145	100.0
Median	7.0		10.0		9.0		16.0		11.0		8.0	

*Assumed pre-test grade placement score of 1.0

PROJECT ASPIRATION RECEIVING SCHOOLS--CHART 2

MEDIAN MONTHS OF GROWTH IN READING ACHIEVEMENT FOR PUPILS IN TWENTY-THREE PROJECT ASPIRATION RECEIVING SCHOOLS BY PLACEMENT (GRADE) LEVEL



*Assumed pre-test grade placement score of 1.0

Source: 61 p. 202 **Sacramento: Table 4** 81

PROJECT ASPIRATION RECEIVING SCHOOLS

DISTRIBUTION OF PUPILS IN TWENTY-THREE PROJECT ASPIRATION RECEIVING SCHOOLS ACCORDING TO MONTHS OF ARITHMETIC ACHIEVEMENT GROWTH FROM OCTOBER 1970 TO MAY 1971
BY PLACEMENT (GRADE) LEVEL

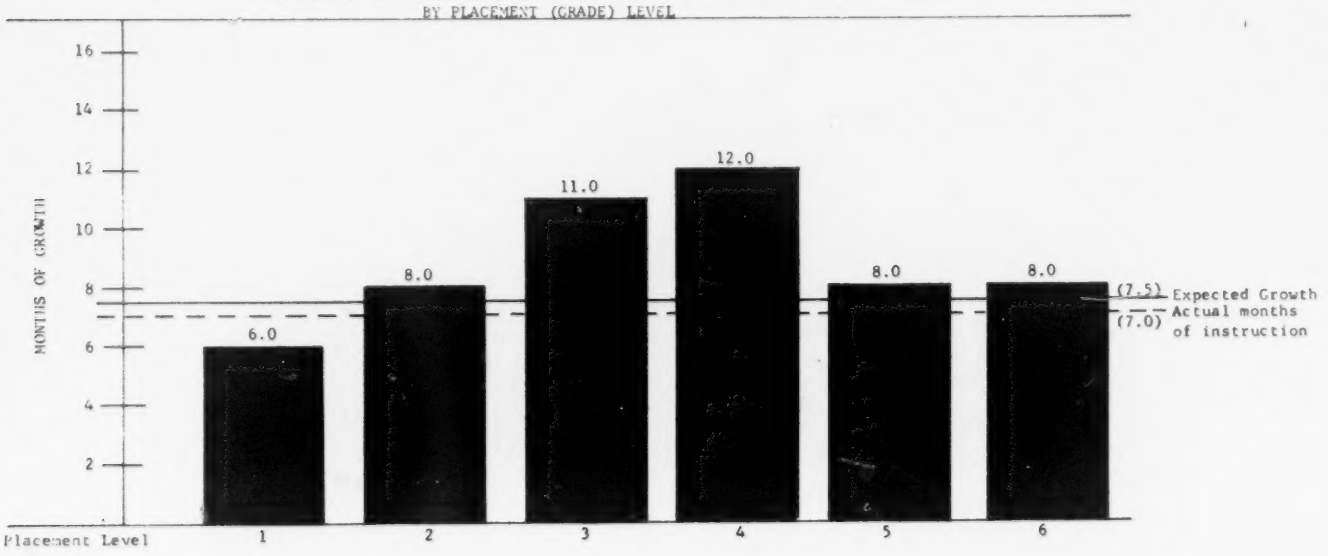
CALIFORNIA ACHIEVEMENT TEST--TOTAL ARITHMETIC

Months of Growth	Distribution of Pupils by Placement Level											
	Level 1*		Level 2		Level 3		Level 4		Level 5		Level 6	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
over 33							6	5.2	2	1.5	1	0.7
33											1	0.7
32							1	0.9	1	0.7		
31							1	0.9	1	0.7		
30							3	2.6	1	0.7		
29									2	1.5		
28							2	1.7	1	0.7	2	1.5
27							1	0.9				
26							2	1.7			1	0.7
25					1	0.7	3	2.6			2	1.5
24	1	0.4					4	3.4			2	1.5
23							1	0.9	1	0.7	1	0.7
22					1	0.7	2	1.7	1	0.7		
21	2	0.9					3	2.6	1	0.7	1	0.7
20	2	0.9			4	2.6	2	1.7	1	0.7	1	0.7
19	1	0.4	2	1.4	4	2.6	2	1.7	2	1.5	2	1.5
18	4	1.7	1	0.7	1	0.7	1	0.9	2	1.5	2	1.5
17	5	2.1	2	1.4	7	4.6	3	2.6	3	2.3	4	3.0
16	4	1.7	4	2.7	8	5.3	6	5.2	4	3.0	1	0.7
15	4	1.7	7	4.8	9	5.9	4	3.4	5	3.7	2	1.5
14	6	2.6	4	2.7	12	7.9	3	2.6	5	3.7	3	2.2
13	8	3.4	9	6.2	7	4.6	7	5.9	6	4.5	9	6.7
12	1	0.4	7	4.8	13	8.5	5	4.3	6	4.5	3	2.2
11	7	3.0	9	6.2	14	9.2	11	9.4	3	2.3	9	6.7
10	13	5.6	16	10.9	6	3.9	9	7.7	11	8.2	6	4.5
9	14	6.0	7	4.8	14	9.2	5	4.3	7	5.2	11	8.1
8	20	8.5	15	10.3	15	9.9	6	5.2	6	4.5	5	3.7
7	25	10.7	9	6.2	13	8.5	3	2.6	9	6.7	10	7.4
6	23	9.8	16	10.9	11	7.2	6	5.2	12	9.0	8	6.0
5	16	6.8	11	7.5	5	3.3	3	2.6	4	3.0	10	7.4
4	17	7.3	7	4.8	2	1.3	2	1.7	6	4.5	7	5.2
3	26	11.1	7	4.8			2	1.7	3	2.3	9	6.7
2	14	6.0	6	4.1	3	2.0	1	0.9	5	3.7	6	4.5
1	14	6.0	4	2.7	1	0.7	1	0.9	6	4.5	3	2.2
0	3	1.3	3	2.1	1	0.7	3	2.6	4	3.0	7	5.2
-1	4	1.7							3	2.3	3	2.2
-2							1	0.9	6	4.5	2	1.5
-3									3	2.3		
-4												
-5											1	0.7
-6												
-7												
-8									1	0.7		
-9												
-10 or less							1	0.9				
No. of Pupils	234	100.0	146	100.0	152	100.0	116	100.0	134	100.0	135	100.0
Median	6.0		8.0		11.0		12.0		8.0		8.0	

*Assumed pre-test grade placement score of 1.0

PROJECT ASPIRATION RECEIVING SCHOOLS--CHART 3

MEDIAN MONTHS OF GROWTH IN ARITHMETIC ACHIEVEMENT FOR PUPILS IN TWENTY-THREE PROJECT ASPIRATION RECEIVING SCHOOLS BY PLACEMENT (GRADE) LEVEL



*Assumed pre-test grade placement score of 1.0

APPENDIX K

Description of the Study	Achievement Results	Relationship Between Cost/Intensity & Achievement Gain	Analysis
Indianapolis, Indiana - FY 70 Title I Evaluation A. Programmed Math Project 901 participants tested in 4th, 5th and 6th grades experimental program. The normal expected gain for the elapsed time between tests is 0.7. The experimental group consisted of 1378 Title I pupils in grades 4,5,6 who were at least one year below grade level.	A. Programmed Math Program Average Gains / Year Grade 4: Experimental Group 1.9, Control Group 1.5 Grade 5: Experimental Group 0.8, Control Group 0.6 Grade 6: Experimental Group 0.7, Control Group 0.4 The difference in gain scores are statistically significant at 5% level for all 3 grades.	A. Programmed Math Program Per Pupil Expenditure - $56.	
B. Remedial Reading Project 1. Consultant Service Sought to increase performance by improving the instructional competency of teachers. Also served a limited group of under achievers in reading laboratory where 45 pre-tested and 32 post-tested.	B. Remedial Reading Project 1. Consultant Service Sub-Project Average Gain Scores by Grade Grade 4: Average Gain .7 Grade 5: Average Gain 1.0 Grade 6: Average Gain 1.6) Gain are significant at the 5% level	B. Remedial Reading Project per pupil expenditure - $154.	B. The lack of more impressive results can probably be partially attributed to the erroneous use of a diagnostic test to measure achievement gains.
2. Reading Specialist Program Seven teachers served 700 initial enrollees in 20 buildings. 373 pupils completed the program of individualized instruction in small groups.	2. Reading Specialist Program Average Gain Scores by Grade Grade 4: Average Gain .6 Grade 5: Average Gain .6 Grade 6: Average Gain .5) Gains not significant		

APPENDIX L

Cleveland, Ohio

A. Does Compensatory Education Work?

During FY-71 the Cleveland Public Schools evaluated two programs designed to improve the reading ability of disadvantaged children. Evaluation of pre-post Gates-MacGinitie test data for pupils in both programs indicated that substantial reading gains were demonstrated by many pupils served in these programs. Pupils deemed to be reading at an "acceptable level of performance" ranged from one-third to one-half of the total participants in the two programs evaluated during the fiscal year.

1. Diagnostic Reading Clinic Program (Title I)

The general purpose of this program was the diagnosis of reading disabilities which required instructional strategies beyond the resources of the usual classroom. Individual assessment and perscription teaching by specialists were provided to a total of 846 pupils in grades 4-7 (644 were assigned to the remedial portion) by a full-time staff of 30 augmented by the services of two part-time individuals (Table 1). Pupils were transported to and from their home schools to the clinic on a daily basis. Pupils received services for an average of 5 hours per week for the service team.

For purposes of evaluation a 12% representative sample of remedial participants was randomly selected (N=75). The criterion of reading achievement within one year of reading expectancy (grade level) was deemed an "appropriate level of performance" and better than 1/3 of the participants reached this goal. The average gain in grade equivalent units was 6.2 in an average service period of 3.2 months -- almost twice the gain expected of normal children for this time period. The remedial needs of pupils determined their placement in the following three remedial categories: (Table 2)

long-term -- (Most severely disabled -- 40% of service group) - average service period was 4½ months -- average gain of almost 8 grade equivalents (1.7 GE/month).

moderate-term --(52% of service group) -- made average gain of almost 4 units in average service period of three months (1.2 GE/month).

short-term -- (9% of service group) -- narrowed the gap between performance levels and reading expectancy by an average of 7 months in a 2-month average service period (3.5 GE/month).

2. Reading Improvement Project - Title I

This program is designed to serve the primary grades in target schools with the greatest proportion of economic deprivation. The project utilizes the services of a reading consultant in each target school and serves a randomly selected group of pupils identified by classroom teachers and school principals as experiencing difficulty in mastering reading. The program provides master teachers and educational aides to furnish individual and small group instruction on a daily basis.

In FY 71 project services were provided to 1838 pupils in grades 1-3 in 20 public and three non-public schools eligible for Title I services.* Children recommended for this experimental program who were not randomly selected were placed on a waiting list for future assignment in the event experimental children moved from the attendance zone. For program evaluation purposes, a control group was selected from these program eligible but non-participating children. The evaluation sample containing both experimental and control children is shown in Table 4.

A comparison of post test scores for the experimental and control groups (Table 5) indicates that the experimental pupils performed significantly higher than control pupils on tests of vocabulary and comprehension. (Multivariate F-ratio =4.8330, statistically significant at the .0003 level of probability.) These data are shown graphically in Table 6.

Third grade experimental girls scored 1.0 grade equivalent unit higher than the control group in vocabulary and 9/10 G.E. unit higher in comprehension. The experimental boys also scored higher than the control groups.

Grade two experimental boys and girls both scored significantly higher than the control groups in vocabulary and slightly higher in comprehension.

First grade experimental girls scored higher in both vocabulary and comprehension while there was no difference between experimental and control group boys at this level.

Comparison of pre and post test scores for boys (Table 7) and girls (Table 8) in the experimental and control groups with normal expectation shows that the rate of gain for the experimental groups exceeds the normal rate for 2nd and 3rd grade vocabulary and 3rd grade comprehension. The improvement of the experimental groups always exceeds that of the control group and 3rd grade girls

*See Table 3.

succeeded in achieving the vocabulary level expected of normal children. The 2nd grade comprehension scores for both boys and girls shows that although the experimental groups were performing slightly better than the control groups, the rate of gain (slope) was lower than the rate of gain of normal children.

For purposes of evaluating the reading improvement project effect, a criterion of reading performance within one half-year of reading expectancy (grade level) was established. A comparison of grade equivalent scores for comprehension with reading expectancies showed that 49 percent of second graders served by the program placed within a half-year or above their reading expectancies. Fifty percent of the third grade pupils achieved this level of performance. Similar evaluations of the Reading Improvement Project for the two preceding years were: FY 69, 2nd grade = 40%, 3rd grade = 37%; FY 70, 2nd grade = 49%, 3rd grade = 38%.

B. Is there a relationship between cost/intensity and probability of Success?

1. Diagnostic Clinic Costs:

Average program costs for the upper elementary grades was $322 per pupil. Calculation of the cost of each .1 equivalent units based on the overall average of 6.2 grade equivalent units of gain evidenced by the total sample results in a cost of $52 for each grade equivalent unit

Normal district PPE reading = $81

Normal expected gain/month = 1.0

Diagnostic Clinic PPE = $322

Average gain/month 1.2 - 3.5

2. Reading Improvement Project Costs:

Per pupil expenditures in this program were also $322. Based on test scores for comprehension and vocabulary it was determined that it cost approximately $1,075 per disadvantaged pupil to raise comprehension by one grade level and approximately $645 for vocabulary.

C. Limitations of the Data

1. Diagnostic Clinic Program

The nature of this program precluded the use of the traditional experimental-control design for evaluation. The methodology of determining the objective criterion of raising reading performance to within one year of grade level is satisfactorily documented. Some education evaluators feel that the short elapsed time period (average of 2 months) between pre and post testing results of the highest scoring group (short service term) may result in less reliable scores. Gains achieved by the moderate and long-term groups are probably the more realistic in scale.

2. Reading Improvement Project

Well planned evaluation using standard experimental -- control design and evaluation techniques.

Cleveland, Ohio -- Diagnostic Clinic Program

Cleveland: Table 1

Program Participants

Grade	Public	Non-Public	Total
4	262	31	293
5	291	40	331
6	181	23	204
7	14	4	18
TOTAL	748	98	846
%	(88.5)	(11.5)	(100.0)

From the total group receiving diagnostic services, 644 were assigned to the Clinic for the correctional reading program according to the following treatment categories:

. Long-term service, 255 pupils, 40 per cent of service group;

. Moderate-term service, 322 pupils, 52 per cent of service group;

. Short-term, 57 pupils, 9 per cent of service group.

Cleveland: Table 2

Average Gains Between Reading Performance Levels and Expectancies

Service Group	No. Pupils	Average Gains in G.E. Units*	Average Service Period	Average Monthly Gain
Long	30	7.7	4.5 months	1.7
Moderate	39	3.7	3.1 months	1.2
Short	6	7.3	2.1 months	3.5
Total Sample	75	6.2	3.2 months	1.9

*Based on Reading Comprehension Test Results

Source: Diagnostic Reading Clinic - Title I Evaluation 1970-71, pp.9,6 prepared by Cleveland Public Schools, Division of Research and Development. **Source: 40.**

Cleveland: Table 3

Cleveland, Ohio -- Reading Improvement Project

Distribution of Project Participants by Grade and Sex

	PUBLIC			NON PUBLIC		
Group	Boys	Girls	Total	Boys	Girls	Total
Grade 1	241	190	431	11	9	20
Grade 2	339	266	605	15	9	24
Grade 3	421	331	752	6		6
TOTAL	1,001	787	1,788*	32	18	50

*A total of 1,838 pupils participated in the project

Cleveland: Table 4

Sample Population by Grade and Sex

Grade	Group	Experimental	Control	Total
1	Boys	32	13	45
	Girls	24	9	33
2	Boys	58	21	79
	Girls	42	21	63
3	Boys	53	22	75
	Girls	44	15	59
	Total	253	101	354

Source: Reading Improvement Project - Title I Evaluation 1970-71,pp.8,17
Prepared by Cleveland Public Schools, Division of Research and Development. **Source:** 41.

Cleveland: Table 5

Cleveland, Ohio - Reading Improvement Project

Post Test Average Grade Equivalent Scores (Gates-MacGinitie)
For Evaluation Sample Experimental and Control Groups
By Grade and Sex

Grade 1, 2, 3

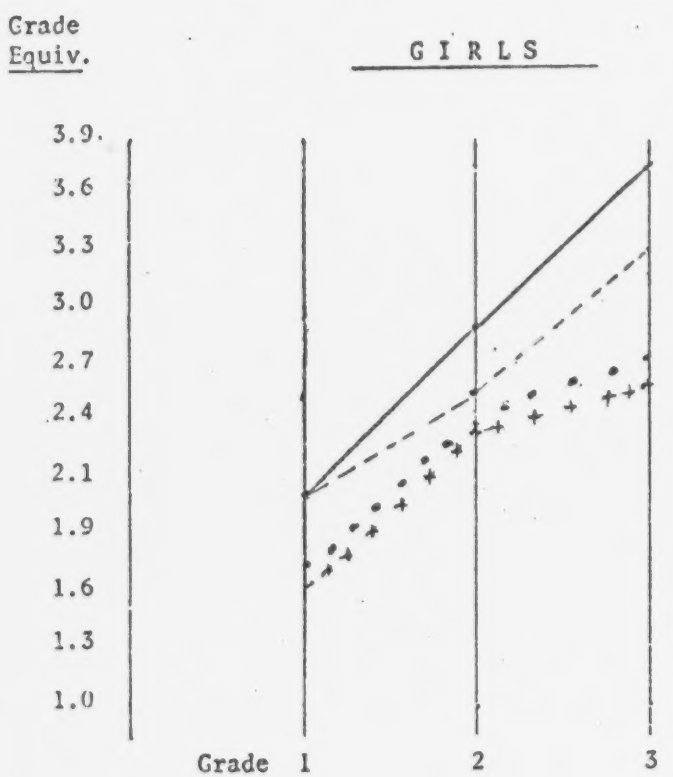
Grade		Mean*	Vocabulary Grade Equivalent	Mean*	Comprehension Grade Equivalent
I Boys	E	45.09	1.7	45.75	1.6
	C	45.46	1.7	43.62	1.6
Girls	E	49.33	2.0	50.62	2.0
	C	43.89	1.7	45.33	1.6
II Boys	E	46.55	2.6	42.90	2.4
	C	42.71	2.3	41.52	2.3
Girls	E	48.93	2.8	44.74	2.5
	C	42.86	2.3	41.86	2.3
III Boys	E	46.26	3.4	44.17	3.0
	C	42.68	3.0	40.27	2.5
Girls	E	49.07	3.7	45.52	3.3
	C	41.13	2.7	38.53	2.4

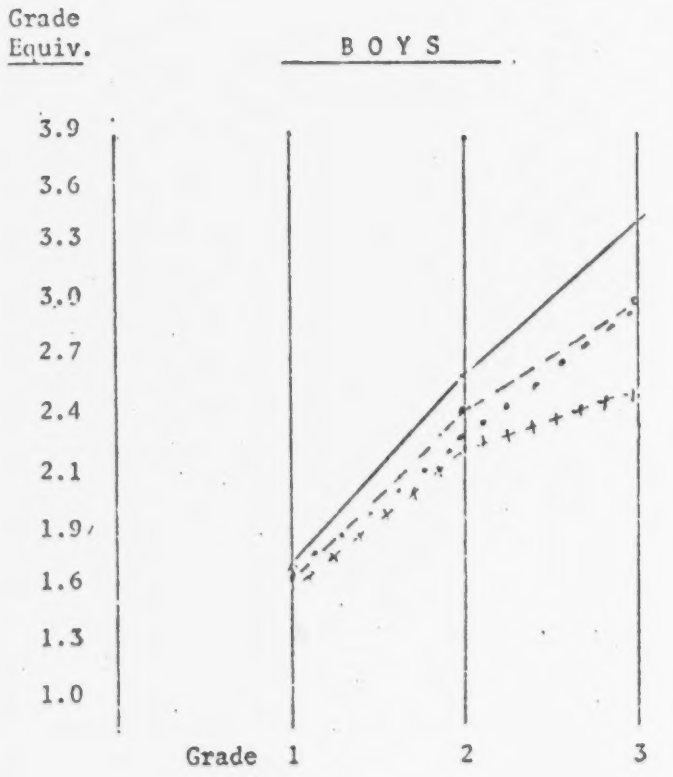
*Post Test Standard Score Means

Source: Reading Improvement Project - Title I Evaluation 1970-71, p.25
Prepared by Cleveland Public Schools, Division of Research and Development. **Source:** 41.

Cleveland, Ohio -- Reading Improvement Project
Table 6

Levels of Performance - Post Tests
Average Grade Equivalent Scores
Experimental vs. Control Pupils





Girls	Voc.	Comp.	Voc.	Comp.	Voc.	Comp.
Exp.	2.0	2.0	2.8	2.5	3.7	3.3
Con.	1.7	1.6	2.3	2.3	2.7	2.4

Boys	Voc.	Comp.	Voc.	Comp.	Voc.	Comp.
Exp.	1.7	1.6	2.6	2.4	3.4	3.0
Con.	1.7	1.6	2.3	2.3	3.0	2.5

Exp. Voc. _____ Con. Voc. . . . .

Exp. Com. - - - - Con. Com. + + + +

Source: Reading Improvement Project - Title I Evaluation 1970-71, p.26
Prepared by Cleveland Public Schools, Division of Research and Development. Source: 41.

463-590 O - 72 - 4

Cleveland, Ohio - Reading Improvement Project

Table 7

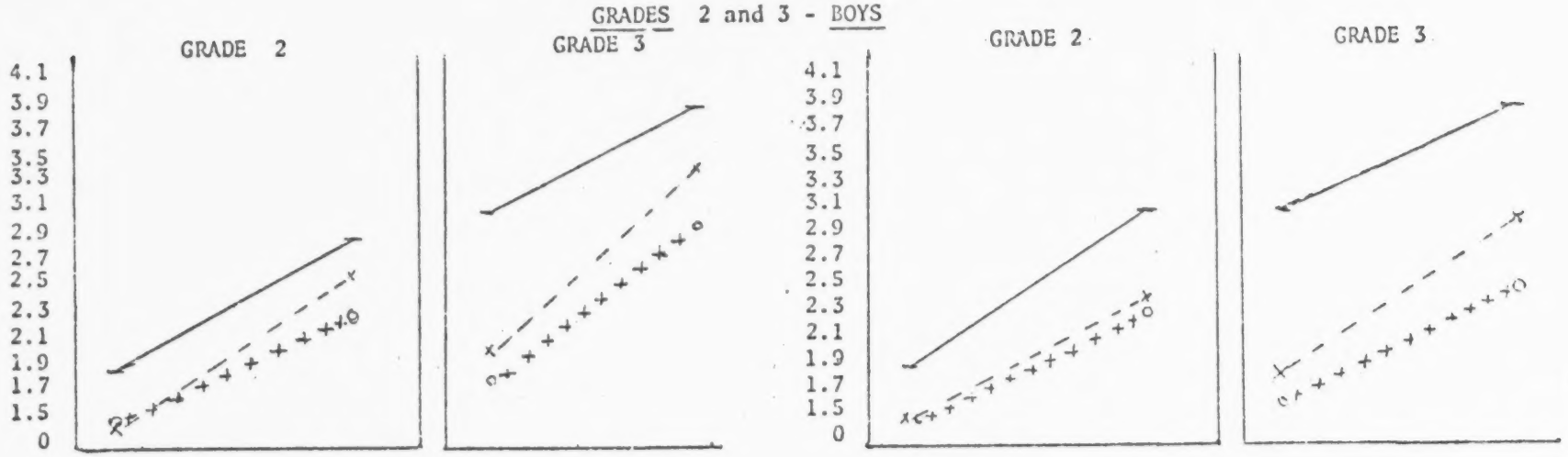
READING IMPROVEMENT

Changes in Reading Performance - Average Grade

Equivalent Scores Obtained in Pre and Post Tests

Experimental V.S. Control Pupils

GRADES 2 and 3 - BOYS



VOCABULARY

	GRADE 2		GRADE 3	
	PRE	POST	PRE	POST
E.	1.4	2.6	2.0	3.4
C.	1.5	2.3	1.8	3.0

COMPREHENSION

	GRADE 2		GRADE 3	
	PRE	POST	PRE	POST
E.	1.5	2.4	1.8	3.0
C	1.5	2.3	1.6	2.5

NORM ————
Experimental --
Control ++++++

Source: Reading Improvement Project - Title I Evaluation 1970-71, p.28
Prepared by Cleveland Public Schools, Division of Research and Development, Source: 41.

Cleveland, Ohio - Reading Improvement Project

Table 8

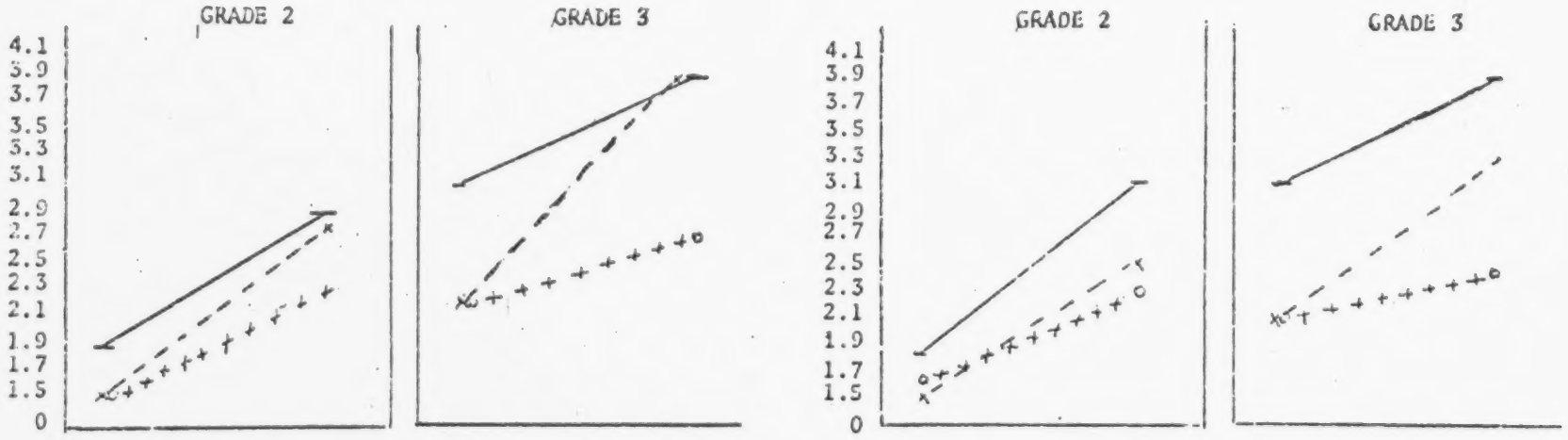
READING IMPROVEMENT

Changes in Reading Performance - Average Grade

Equivalent Scores Obtained in Pre and Post Tests

Experimental vs. Control Pupils

GRADES 2 and 3 - GIRLS



VOCABULARY

	GRADE 2		GRADE 3	
	PRE	POST	PRE	POST
E.	1.5	2.8	2.2	3.7
C.	1.5	2.3	2.2	2.7

COMPREHENSION

	GRADE 2		GRADE 3	
	PRE	POST	PRE	POST
E.	1.5	2.5	1.9	3.3
C.	1.6	2.3	1.9	2.4

NORM ————

Experimental--

Control +++++

Source: Reading Improvement Project - Title I Evaluation 1970-71, p. 29
Prepared by Cleveland Public Schools, Division of Research and Evaluation. Source 41.

APPENDIX M

SUMMARY

Federal Evaluations of Compensatory Education

There have been four large-scale evaluations of federally funded compensatory education programs. The main finding of these studies was that compensatory education has not been successful in significantly improving the achievement level of disadvantaged children.

1966-67 School Year

The FY 67 report on Title I analyzed achievement scores for 155,000 students in 189 Title I projects. The results indicated:

> "that a child who participated in a Title I project had only a 19% chance of a significant achievement gain, a 13% chance of a significant loss, and a 68% chance of no change at all. This sample of observations is unrepresentative of Title I projects. It is, more likely, representative of projects in which there was a higher than average investment in resources. Therefore, more significant achievement gains should be found here than in the more representative sample of Title I projects. [1]

Analysis of Compensatory Education in 11 Cities: 1965-1967

GE-TEMPO studied compensatory education programs for 132 schools in 11 school districts in 1968.[2] The study utilized pre-treatment and post-treatment achievement scores for 35,000 pupils from school years 1965-66 and 1966-67. It was commissioned to answer two questions: whether compensatory education programs resulted in enhancement of pupil performance and what pupil, school, and program characteristics were associated with changes in pupil performance.

The sample was chosen in conjunction with HEW, and the districts were selected on the assumption that they might be the most likely to show progress. Both longitudinal and fixed grade analyses were done with the achievement test data for reading. The issue considered was whether the achievement gap between Title I classes and the national norm was closed: the fixed-grade analysis focused upon the movement of the mean and the first decile of that distribution. Achievement results were ambiguous: in the majority of grade unit cases (180 out of 314) there was either negative or no change in the first decile. The longitudinal analysis was available only for one district and indicated that concentrated reading programs showed impressive gains: the rate of improvement was 10% greater than the normal achievement rate of 1.0 grade equivalent units per year.

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[1] Piccariello, Report for Fiscal Year 1967, no date. Source: 68 p. 1

[2] TEMPO Evaluation of Title I ESEA Compensatory Education, General Electric Company, TEMPO Center for Advance Studies, Santa Barbara, California, 1968. Source: 65.

1967-1968 School Year

The FY 68 Survey of Compensatory Education was unrepresentative nationally and also tended to over-represent large urban districts.[1] No relation was found between extent of participation in compensatory education and achievement, and neither participants nor non-participants demonstrated any improvement in the rate of reading progress. The FY 68 survey also found that pupil family income and education and school socioeconomic composition were consistently related to pupil achievement, regardless of compensatory participation.

The analysis design assumed 133,500 achievement scores would be collected. Instead, the total used for analyses was 11,500 of which 40% were participants and 60% were non-participants. These scores were analyzed because they were among the few submitted, which were both pre and post from one of the standardized tests.

1968-1969 School Year

Achievement data were collected by the FY 1969 Survey of Compensatory Education and analyzed and reported by Glass (1970).[2] The standardized achievement data used in this analysis was not representative nationally but does contain a significant number of scores for Title I children. Out of 104,000 students in the national sample of both participants and non-participants in Title I, only 7,784 scores (or 7.5%) in grades 2, 4 and 6 were analyzed - 20% were participating children while 80% were non-participating children.

SUMMARY OF AVAILABILITY OF ACHIEVEMENT TEST DATA[3]

1969 Survey of Compensatory Education
National Sample of 104,000 Pupils in Grades 2, 4, 6

Grade	Matched Pre-Post Test Scores	Matched Scores of Completed Data	Matched Scores With Complete Data and Sufficient Number of scores
2	5,805	3,130	2,205
4	4,556	2,685	2,685
6	7,056	3,316	2,894
	17,419	9,131	7,784*

*Total set of test scores analyzed: only 1,500 (20%) were Title I participants.

[1] Education of the Disadvantaged: An Evaluation Report on Title I of ESEA, Fiscal Year 1968 Source: 64.

[2] Glass, G. V., Data Analysis of the 1968-69 Survey of Compensatory Education (Title I), Final Report. Boulder, Colorado: University of Colorado Laboratory of Educational Research, August 1970. Source: 66.

[3] HEW/ASPE internal working paper, February 9, 1971.

The analysis of achievement data shows that a higher proportion of students selected for participation in reading programs were below grade level than were non-participants. This indicates that children with the greatest reading deficits were selected for remedial reading programs. In addition, when residual gain scores (scores calculated by subtracting post-test scores from predicted post-test scores) were analyzed, results of this subsample showed that nonparticipants made larger gains than participants.

The number of remedial reading programs serving children seemed to have little effect on participants' reading gains. The FY 69 survey, however, did collect opinions on student achievement taken from a nationally representative group of teachers. They rated participants and non-participants in terms of proficiency in certain subjects. In reading, 68% of the Title I participants were rated by their teachers as showing improvement compared to 58.5% for non-participants. In mathematics, the proportions were 58.2% and 56.2% respectively for participants and non-participants. This opinion data is interesting but by no means conclusive.

SUMMARY

Independent Assessment of The National Survey for 1968-69

Two scholars examined the 1968-69 Federal survey of compensatory education.1/ A summary of their conclusions and excerpts from their report are included in order to provide further information on what has and has not been learned in these surveys.

In answer to the question, "What has been the impact of Title I and a wide variety of other compensatory education efforts on the children served?" the study found:

1. Inadequate evaluation strategies made it impossible to determine whether children in compensatory programs showed increases in average yearly achievement relative to appropriate control children. When, however, participants were compared to non-participants (including disadvantaged and non-disadvantaged pupils), they continued to show declines in average yearly achievement (relative to non-participants).

2. "Teacher estimates of academic achievement for participants showed significantly greater results than did test results. Teachers also found desirable social growth more often in participants than in non-participants. These survey findings are consistent with other studies which in general show teacher's subjective judgments re improvement more favorable than objective tests and also show positive estimates of change in the affective domain".

1/ Edmund W. Gordon and James Kourtrelakos, "Utilizing Available Information from Compensatory Education and Surveys", Final Report, Office of Education, 1971.

APPENDIX N

ACHIEVEMENT RESULTS FROM THE NATIONAL EVALUATION OF FOLLOW THROUGH

Background

Since 1967, Follow Through has conducted research on a variety of approaches for educating disadvantaged children from kindergarten through third grade. During the past three years, Follow Through has attempted to implement and evaluate 20 different approaches to compensatory education in its research. Initial evaluation data suggest that a range of alternative "models" for educating disadvantaged children have been developed. Although conclusions concerning Follow Through must be considered tentative pending replication of first cohort findings, the Office of Education is beginning to possess information about a number of alternative compensatory education approaches. A meaningful basis for policy decisions will be provided by information concerning the first complete Follow Through cohort--the cohort which will graduate from third grade in June, 1973.

Preliminary data collected during 1969-70 on kindergarten and first grade children in the first complete Follow Through cohort revealed that:

--Follow Through children made greater achievement gains than comparison children. The differences were statistically significant at both grade levels, although they were extremely small in absolute magnitude.

--Effects of Follow Through on achievement were greatest for children whose families were definitely below the OEO poverty line. The differences between gains of Follow Through children from these families and gains of comparison children were again statistically significant at both kindergarten and first grade, although once more the absolute size of differences was quite small.

Preliminary results from the first national evaluation of Follow Through are now available. These data focus on the consequences of the program for participating children, their parents and teachers during the 1969-70 school year. Fourteen of the twenty Follow Through approaches were in their second or third years of operation during 1969-70 and were included in the evaluation. In order to describe some of the "inputs" provided by them, the evaluation asked, "What is the nature of children's, parents' and teachers' experiences in programs based on different approaches?" In order to describe the benefits or "outputs" of different approaches, the evaluation assessed changes in a variety of domains assumed to effect children's subsequent experiences and thereby ultimately influence their opportunities for self-confident, productive lives. Included were children's academic achievement, their attitudes towards school and learning and their interpersonal feelings; parents' participation in education programs and educational policy decisions and their feelings of efficacy in relation to their own lives, the school and the community; and teachers' educational practices and attitudes and their satisfaction with Follow Through children's progress.

Conclusions concerning these areas must be considered tentative pending results of current efforts in evaluating the Follow Through program. A major ongoing evaluation is both reexamining patterns of effects which were found in the first year of evaluation and is collecting and analyzing data with considerably more precision than heretofore. Evidence was collected during 1969-70 on a sample of 5800 children in their first year of public school--in kindergarten in some school districts and first grade in others. This evidence suggests that Follow Through is accomplishing some of its intended objectives.

The fourteen different approaches in the 1969-70 evaluation can be categorized into five groups on the basis of their primary emphasis in working with disadvantaged children and their families. A first sponsor group, the Structured Academic approaches, includes models that place heavy emphasis on teaching academic information in the classroom through programmed instructional techniques. The second group of sponsors, the Discovery approaches, have as their primary goal promoting the development of autonomous, self-confident learners rather than simply transmitting specific knowledge and skills. The third group of sponsors, the Cognitive Discovery approaches, attempt primarily to foster the growth of basic cognitive processes such as reasoning, classifying, and counting through guiding children's discoveries, through teaching specific skills to them, and through constantly engaging children in verbal activities. The fourth group of programs, the Self-Sponsored approaches, are similar to one another in unique characteristics of sponsorship rather than in the educational processes they employ. All the projects in this group are Self-Sponsored, meaning the local school district staff has played the role of architect and implementer of the Follow Through project. The fifth group includes sponsors which are also similar in unique characteristics of sponsorship, in this case each of them being Parent-Implemented and not having a secondary affiliation with a particular instructional model.

Although the children in the evaluation are scheduled to participate in Follow Through projects for 2-3 more years (through completion of third grade), the evaluation showed that after 1-2 years in the program:

- o Follow Through children made somewhat greater gains in achievement during the school year than did non-Follow Through children. The differences, although small in absolute magnitude, were statistically significant in both the kindergarten and first grade samples.

- o Effects of Follow Through on achievement were greatest for children whose families were definitely below the Office of Economic Opportunity poverty line. Both kindergarten and first grade Follow Through children from these families made gains in achievement larger than those of comparison children. Again, differences were small in absolute size but were statistically significant at both grade levels.

- o Follow Through's effects on achievement were largest in magnitude and most consistent in Structured Academic approaches--those approaches emphasizing the teaching of academic information through sequentially structured activities and frequent extrinsic reinforcement. The differences between achievement gains of Follow Through children in these approaches and comparison children were statistically significant at both kindergarten and first grade, although the absolute size of differences was once again small. Statistically significant differences in achievement between Follow Through and non-Follow Through children were found at either kindergarten or first grade (but not both) in other approaches, with all of these findings favoring Follow Through children.

- o Follow Through children manifested positive shifts in attitudes toward school and learning during the school year, shifts larger than those of comparison children in both kindergarten and first grade. The differences approached statistical significance at both grade levels, but were again small in absolute size.

- o Follow Through participants whose families were definitely below the OEO poverty line made the largest positive shifts of any children in attitudes towards school and learning. Their gains were somewhat larger than those of comparison children at both grade levels, and the differences were statistically significant among first graders.

- o Positive shifts in attitudes towards school and learning among Follow Through children were greatest and most consistent in Discovery and Cognitive-Discovery approaches, with children in these approaches making slightly larger gains than comparison children in both kindergarten and first grade. These approaches tend to view the child's development as a complex whole, in which the growth of a positive self-image, initiative, independence, expectations of success, and problem-solving skills are all important and interrelated aspects of development.

- In the Discovery and Cognitive-Discovery approaches, there was a statistically significant association between gains in achievement and positive shifts in attitudes towards school and learning. In other words, in these approaches children's growth in attitudes and in achievement went hand-in-hand. In the Structured Academic approaches, in contrast, growth in achievement and in attitudes were found to be independent of one another.

- Systematic observations of Follow Through classrooms indicated that approaches differed in actual practice in accordance with their published program descriptions. The kinds of activities engaged in by different classes, the role of children's own inquiry versus teacher-directed learning, and the nature of teachers' praise and feedback were a few of the dimensions for which objective observations suggested a correspondence between programs' orientations and children's day-to-day experiences. The systematic observations also showed that most adult-child communication in Follow Through classes focussed on the individual child or a small group of children, with significantly more adult communication being addressed to large groups of children in non-Follow Through than in Follow Through classes.

- Parents of Follow Through children were better informed about their children's school programs, more likely to visit school, to work in classrooms and talk to teachers, and more convinced of their ability to effect school programs than parents of comparison children. Differences in each of these areas were statistically significant in both the kindergarten and first-grade samples, suggesting that Follow Through was successful in increasing parental awareness of and involvement in school activities.

- Follow Through's consequences for teachers were suggested in both attitudes and behaviors. Follow Through teachers were more likely to consider home-visits important and to make more home-visits, and to place high value on parents' direct participation in the classroom than non-Follow Through teachers. In addition, Follow Through teachers showed markedly greater satisfaction with the progress of their students than did non-Follow Through teachers.

In summary, the 1969-70 evaluation of Follow Through provided preliminary information for Federal and State decision makers, for school administrators, teachers and parents about the variety of educational experiences available to young children and the likely consequences of these experiences. It suggested that Follow Through is having some impact on children's academic achievement and their attitudes towards school and learning. It also suggested a match between programs' orientations, the classroom experiences they provide, and their patterns of effects on children.

The conclusions to be drawn from the first year evaluation are, however, unclear. The consistent pattern of positive and statistically significant effects suggest to some well-informed individuals that Follow Through is a success--and is definitely more of a success than other compensatory education programs. Equally well-informed individuals have pointed to the small absolute size of differences between Follow Through and non-Follow Through children and have proclaimed the program a failure--particularly in view of the Follow Through program cost of $800 per child. These individuals have emphasized the point that statistically significant-results which are readily achieved in comparisons involving large numbers of cases like those in the Follow Through evaluation) should not blind us to the fact that absolute differences between the Follow Through and control samples are very small. Thus, before we can conclude that the Follow Through program is in fact achieving educationally significant results, the final evaluation will have to demonstrate much larger differences than have appeared so far between the Follow Through and control groups.

It appears that a definitive interpretation of the first-year findings must await the results of ongoing evaluation efforts. The current Follow Through evaluation will describe effects of different approaches after children have participated in them continuously for several years. In addition, it will re-examine patterns of effects which were found in the first year of evaluation and will collect and analyze data with considerably more precision than heretofore. Therefore, the information collected in the current evaluation should help to interpret the significance of findings from the first-year evaluation.

APPENDIX O

SUMMARY

EVALUATION OF THE HEAD START PROGRAM[1]

This report presents the results of a study on the impact of Head Start carried out for the Office of Economic Opportunity from June 1968 through May 1969 by Westinghouse Learning Corporation and Ohio University.

The study attempted in a relatively short period of time to provide an answer to a limited question concerning Head Start's impact; namely: Taking the program as a whole as it has operated to date, to what degree has it had psychological and intellectual impact on children that has persisted into the primary grades?

The very real limitation of our study should be established at once. The study did not address the question of Head Start's medical or nutritional impact. It did not measure the effect of Head Start on the stability of family life. It did not assess the impact of Head Start on the total community, on the schools, or on the morale and attitudes of the children while they were in the program. The study is therefore a limited and partial evaluation, but one based on solid, useful, and responsible research.

We were not asked to answer all the questions that might have been asked. Those that we did ask (and answer), however,

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1/Westinghouse Learning Corporation-Ohio State University, The Impact of Headstart, June 12,1969

were the right questions to ask first. This is an ex post facto study; we therefore did not have the opportunity to observe the Head Start classrooms whose output we measured, nor could we attempt to ascertain various kinds of secondary social or mental health benefits.

The basic question posed by the study was:

> To what extent are the children now in the first, second, and third grades who attended Head Start programs different in their intellectual and social-personal development from comparable children who did not attend?

To answer this question, a sample of one hundred and four Head Start centers across the country was chosen. A sample of children from these centers who had gone on to the first, second, and third grades in local area schools and a matched sample of control children from the same grades and schools who had not attended Head Start were administered a series of tests covering various aspects of cognitive and affective development (listed below). The parents of both the former Head Start enrollees and the control children were interviewed and a broad range of attitudinal, social, and economic data was collected. Directors or other officials of all the centers were interviewed and information was collected on various characteristics of the current local Head Start programs. The primary grade teachers rated both groups of children on achievement motivation and supplied a description of the intellectual and emotional environment of their elementary schools.

Analyses of comparative performances on the assessment measures of all children in the study were conducted for each selected center area. Findings were combined, then, into the total national sample (called the overall analysis) and into three major subgroupings of centers formerly attended by the Head Start children, the latter being classified by geographic region, city size, and racial/ethnic composition. All the findings were also related to the type of program attended, i.e., summer or full-year program.

The major findings of the study are:

1. In the overall analysis for the Metropolitan Readiness Tests (MRT), a generalized measure of learning readiness containing subtests on word meaning, listening, matching, alphabet, numbers, and copying, the Head Start children who had attended full-year programs and who were beginning grade one were superior to the controls by a small but statistically significant margin on both "Total Readiness" and the "Listening" subscore. However, the Head Start children who had attended summer programs did not score significantly higher than the controls. (This particular cognitive measure was used in grade one because it does not require the ability to read.)

2. In the overall analysis for the Stanford Achievement Test (SAT), a general measure of children's academic achievement, containing sub-

tests on word reading, paragraph meaning, spelling, arithmetic, and so on, used to measure achievement at grades two and three, the Head Start children from both the summer and the full-year programs did not score significantly higher than the controls at the grade two level. While the children from the summer programs failed to score higher than the controls at grade three, an adequate evaluation of the effect of the full-year program at this grade level was limited by the small number of programs.

3. In the overall analysis for the Illinois Test of Psycholinguistic Abilities (ITPA), a measure of language development containing separate tests on auditory and vocal reception, auditory and visual memory, auditory-vocal association, visual-motor association, etc., the Head Start children did not score significantly higher than the controls at any of the three grade levels for the summer programs. In the case of the full-year programs, two isolated differences in favor of Head Start were found at grade two for two subtests of the ITPA, namely, "Visual Sequential Memory" and "Manual Expression."

4. In the overall analysis for the Children's Self-Concept Index (CSCI), a projective measure of the degree to which the child has a positive

self-concept, the Head Start children from both the summer and the full-year programs did not score significantly higher than the controls at any of the three grade levels.

5. In the overall analysis for the Classroom Behavior Inventory (CBI), a teacher rating assessment of the children's desire for achievement in school, the Head Start children from both the summer and the full-year programs did not score significantly higher than the controls at any of the three grade levels.

6. In the overall analysis for the Children's Attitudinal Range Indicator (CARI), a picture-story projective measure of the child's attitudes toward school, home, peers, and society, the Head Start children from the full-year programs did not score significantly higher than the controls at any of the three grade levels. One isolated positive difference for summer programs was found on the "Home" attitude subtest at grade one.

7. The above findings pertain to the total national sample. As mentioned previously, additional analyses were made for three subgroups of the national sample: geographic regions, city-size groups, and racial/ethnic composition categories. Analysis of the summer programs by subgroups revealed few differences where Head Start children scored higher than their controls. Analysis

of the full-year programs by the same subgroupings revealed a number of statistically significant differences in which, on some measures (mostly subtests of cognitive measures) and at one or another grade level, the Head Start children scored higher than their controls. There were consistent favorable patterns for certain subgroups: where centers were in the Southeastern geographic region, in core cities, or of mainly Negro composition. Even though the magnitudes of most of these differences were small, they were statistically significant and indicated that the program evidently had had some limited effect with children who had attended one or another of these types of full-year centers.

8. Apart from any comparison with control groups, the scores of Head Start children on cognitive measures fall consistently below the national norms of standardized tests. While the former Head Start enrollees approach the national level on school readiness (measured by the MRT at first grade), their relative standing is considerably less favorable for the tests of language development and scholastic achievement. On the SAT they trail about six-tenths of a year at second grade and close to a full year at grade three. They lag from seven to nine months and eight to eleven months respectively on the ITPA at first and second grades.

9. Parents of Head Start children expressed strong approval of the program and its effect on their children. They reported substantial participation in the activities of the centers. Parents of full-year enrollees tended to be slightly better educated but with a slightly lower income than parents of summer enrollees; summer programs enrolled a larger proportion of white children.

Viewed in broad perspective, the major conclusions of the study are:

1. Summer programs appear to be ineffective in producing any gains in cognitive and affective development that persist into the early elementary grades.

2. Full-year programs appear to be ineffective as measured by the tests of affective development used in the study, but are marginally effective in producing gains in cognitive development that could be detected in grades one, two, and three. Programs appeared to be of greater effectiveness for certain subgroups of centers, notably in mainly Negro centers, in scattered programs in the central cities, and in Southeastern centers.

3. Head Start children, whether from summer or from full-year programs, still appear to be considerably below national norms for the standardized tests of language development and scholastic achievement, while performance on school readiness at grade one approaches the national norm.

4. Parents of Head Start enrollees voiced strong approval of the program and its influence on their children. They reported substantial participation in the activities of the centers.

An analysis of covariance random replications model was used for the main analysis of the data obtained in this study. This statistical procedure was cross-checked by both a non-parametric analysis (with appropriate matchings) and an analysis of covariance with individuals rather than centers as the basic unit. Overall results with all procedures were similar.

In sum, the Head Start children can not be said to be appreciably different from their peers in the elementary grades who did not attend Head Start in most aspects of cognitive and affective development measured in this study, with the exception of the slight but nonetheless significant superiority of full-year Head Start children on certain measures of cognitive development.

A variety of interpretations of the data are possible. Our measures were taken after children had been out of Head Start from one to three years, in order to detect persisting effects. It is conceivable that the program does have a significant impact on the children but that the effect is matched by other experiences, that it is contravened by the generally impoverished environment to which the disadvantaged child returns after he leaves the Head Start program, or that it is an intellectual spurt that the first grade itself produces in the non-Head Start child. Or it is possible that the Head Start program has a significant impact on the children who attended, but that the

presence of these improved children in the classroom has raised the level of the whole class to the point where there are no longer statistically reliable differences between the Head Start and non-Head Start children. A further possibility exists that Head Start has been of considerable impact where adequately implemented, but lack of more positive findings reflects poor implementation of the program. Or it is possible that Head Start has been effective only with certain types of pupils, and so on.

In any case, the study indicates that Head Start as it is presently constituted has not provided widespread significant cognitive and affective gains which are supported, reinforced, or maintained in conventional education programs in the primary grades. However, in view of the mixed results from the full-year findings, the impact on the parents, the obvious values of the medical and nutritional aspects of the program, and the critical need for remediating the effects of poverty on disadvantaged children, we make the following recommendations:

1. Summer programs should be phased out as early as feasible and converted into full-year or extended-year programs.

2. Full-year programs should be continued, but every effort should be made to make them more effective. Some specific suggestions are:

   a. Making them a part of an intervention strategy of longer duration, perhaps extending downward toward infancy and upward into the primary grades.

b. Varying teaching strategies with the characteristics of the children.

c. Concentrating on the remediation of specific deficiencies as suggested by the study, e.g., language deficiencies, deficiencies in spelling or arithmetic.

d. Training of parents to become more effective teachers of their children.

3. In view of the limited state of knowledge about what would constitute a more effective program, some of the full-year programs should be set up as experimental programs (strategically placed on a regional basis), to permit the implementation of new procedures and techniques and provide for an adequate assessment of results. Innovations which prove to be successful could then be instituted on a large scale within the structure of present full-year programs. Within the experimental context, such innovations as longer period of intervention or total family intervention might be tried.

4. Regardless of where and how it is articulated into the structure of the federal government, the agency attempting the dual research and teaching missions presently assigned Head Start should be granted the focal identity and organizational unity necessary to such complex and critical experimental programs. Their basis of funding should take cognizance of both the social significance of these

missions and the present state-of-the-art of programs attempting to carry them out.

In conclusion, although this study indicates that full-year Head Start appears to be a more effective compensatory educational program than summer Head Start, its benefits cannot be described as satisfactory. Therefore we strongly recommend ~~that large-scale~~ efforts and substantial resources continue to be devoted to the search for finding more effective programs, procedures, and techniques for remediating the effects of poverty on disadvantaged children.

APPENDIX P

DESCRIPTIONS OF SUCCESSFUL COMPENSATORY EDUCATION PROJECTS WITH EXPLANATORY NOTES AND DEFINITIONS[1]

1/Source #77

Explanatory Notes and Definitions to Accompany Project Profiles

Context (definitions)

Urban - Community of 2,500 or more inhabitants not within commuting distance of a city of 50,000 or more inhabitants.

Rural - Community of fewer than 2,500 inhabitants.

Suburban - Community of fewer than 50,000 inhabitants within commuting distance of a city with 50,000 or more inhabitants.

Title I Support (definitions)

Yes - Title I support. May have been either total or partial.

No - Unsupported by Title I.

Note: Evaluation of Title I support applies only to the calendar period cited unter Target Group Characteristics.

Number Served (note)

Figure given represents total number of children served during cited time period. In some instances it includes children in grade levels other than those where success was demonstrated.

Dates (note)

Dates reflect period for which evidence of project success was available to the AIR investigators. The projects may have operated at other times as well.

Age or Grade Range (note)

Only those age or grade ranges where success was demonstrated are reported. Projects may have served additional ages or grades.

Measured Cognitive Objectives (note)

Reference is made here only to those cognitive objectives for which there was evidence of project success. Projects may have had other objectives.

Treatment Duration (note)

Time given is from pretest to posttest or from beginning of treatment to posttest. Actual treatment duration may have been greater.

Components (note)

Only the most salient components within each of the listed categories are presented. Space limitations precluded exhaustive enumeration of all project characteristics.

Pupil-Teacher Ratio (definition)

Teacher - Adults in instructional roles were defined as teachers whether or not they were certificated or considered "professional." Adults in noninstructional roles were not counted.

Tests Used (note)

Only those tests are listed which provided evidence of cognitive benefits. Other tests may have been used as well.

ACADEMIC PRESCHOOL
Champaign, Illinois

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 15-20 for each of two years

Dates: 1965-67

Age or Grade Range: 4-5 years old

Ethnic Group: majority Black

Other Pupil Characteristics: One or more years retarded in reading, language, or math; no prior preschool experience.

Project Characteristics

Measured Cognitive Objectives: Performance on tests of readiness in math and reading; stabilization or improvement in performance on tests of IQ.

Facilities: laboratory school classroom

Treatment Duration: Two hours daily for two years.

Components:

Personnel: Administrators prepared materials and trained teachers; teachers were undergraduates and heavily supervised.

Curriculum: programmed

Strategy: teacher directive

Environment: highly structured

Materials: modified commercially available ones

Pupil-Teacher Ratio: 5:1

Training: "extensive" pre- and inservice

Parent Involvement: none indicated

Tests Used: Stanford-Binet, Wide Range Achievement Tests - reading, math

Design and Results: Pre-post design. IQ and reading and math performance significantly better than control group.

AMELIORATIVE PRESCHOOL PROGRAM
Champaign, Illinois

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: same 30 for each of two years

Dates: 1965-67

Age or Grade Range: 4 years old

Ethnic Group: 2/3 Black
1/3 white

Other Pupil Characteristics: IQ's from 70 to over 100 (1/3 70-89, 1/3 90-100, 1/3 over 100); no prior preschool experience

Project Characteristics

Measured Cognitive Objectives: Performance on tests of readiness in math, reading, and language; performance on IQ tests.

Facilities: Preschool year in laboratory classroom; kindergarten year in regular classroom of public school.

Treatment Duration: 2 1/4 hours daily preschool; 1 hour daily kindergarten

Components:

Personnel: Teachers trained and experienced in early childhood teaching; no aides specified.

Curriculum: Content organized hierarchically; used game format; programmed reinforcement.

Strategy: teacher directive

Environment: highly structured; students grouped by ability

Materials: multisensory stimulators

Pupil-Teacher Ratio: 5:1

Training: regular teachers, once a week

Parent Involvement: none indicated

Tests Used: Stanford-Binet, California Achievement - reading, language, math

Design and Results: No pretest; posttest administered one year after two year treatment. IQ and reading, language, and math performance significantly better than control group.

DIAGNOSTICALLY BASED CURRICULUM
Bloomington, Indiana

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 15 for each of three years

Dates: 1964-67

Age or Grade Range: 5 years old

Ethnic Group: white

Other Pupil Characteristics: IQ range from 50 to 85.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on IQ and language ability tests.

Facilities: experimental preschool

Treatment Duration: Four hours daily for one year.

Components:

Personnel: Teachers each year had special training, little experience; male aides used second and third years.

Curriculum: Based on thorough diagnosis of learning problems in language, concept, and fine motor development.

Strategy: teacher directive

Environment: Structured; used behavior modification techniques.

Materials: manipulative, games

Pupil-Teacher Ratio: 15:1 plus some aides

Training: regular teachers, once a week based on class

Parent Involvement: none indicated

Tests Used: Stanford-Binet, Columbia Mental Maturity, Illinois Test of Psycholinguistic Ability, Peabody Picture Vocabulary

Design and Results: Pre-post design. Gain or posttest scores significantly better than control group.

INFANT EDUCATION RESEARCH PROJECT
Washington, D. C.

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 28

Dates: September 1965 - June 1967

Age or Grade Range: 15 months old

Ethnic Group: Black

Other Pupil Characteristics: All males; relatively stable, uncrowded homes.

Project Characteristics

Measured Cognitive Objectives: Stabilization or improvement in performance on tests of IQ.

Facilities: children's homes

Treatment Duration: One hour daily, five days per week/21 months.

Components:

Personnel: Tutors had college degree, experience with inner-city children; no aides specified.

Curriculum: verbal stimulation

Strategy: Tutor directed play activities in the home with mother frequently present.

Environment: unstructured

Materials: toys, games, books

Pupil-Teacher Ratio: 1:1

Training: Tutors had two to three months initial training; 1/2 to 1 hour daily conference with supervisor.

Parent Involvement: Optional in tutorial sessions.

Tests Used: Bayley Infant, Stanford-Binet, Peabody Picture Vocabulary, Johns Hopkins Perceptual

Design and Results: Pre-post with follow-up. Gain or posttest scores significantly better than control group.

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LEARNING TO LEARN PROGRAM
Jacksonville, Florida

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 24

Dates: 1965-66

Age or Grade Range: 5 years old

Ethnic Group: Black

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Performance on tests of IQ.

Facilities: preschool classrooms

Treatment Duration: Approximately three hours daily for nine months.

Components:

Personnel: Experienced teacher assisted by one full-time aide.

Curriculum: Structured sequence of game-like activities.

Strategy: Child-directed free activity for 90 minutes, teacher-directed small-group sessions for 10 to 20 minutes.

Environment: Large-group free periods with game-like activities; small group sessions with more structure; story and discussion period.

Materials: toys, games, books

Pupil-Teacher Ratio: Large group 20:1; small group 2-4:1; story 24:2

Training: Personnel had daily training and planning sessions with videotape.

Parent Involvement: Monthly meetings and biannual teacher-parent conferences.

Tests Used: Stanford-Binet, Peabody Picture Vocabulary, Illinois Test of Psycholinguistic Ability

Design and Results: Posttest only; scores significantly better than control group.

MOTHER-CHILD HOME PROGRAM
Freeport, New York

Title I Support: No

Context: Suburban

Target Group Characteristics

Number Served: approx. 30 for each of two years

Dates: 1967-70

Age or Grade Range: 2-3 years old

Ethnic Group: 90 percent Black

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on tests of IQ.

Facilities: children's homes

Treatment Duration: 1/2 hour twice a week for two years

Components:

Personnel: "Toy Demonstrators" - trained social workers and paraprofessionals.

Curriculum: Structured verbal interactions based on toys and books brought as gifts to child.

Strategy: Verbal interaction sessions between mother and child during visits by Toy Demonstrators.

Environment: moderately structured

Materials: Toys and books designed to stimulate verbal interaction.

Pupil-Teacher Ratio: 1:1

Training: Toy Demonstrators had 8-session training workshop, weekly inservice conferences.

Parent Involvement: Mothers trained to act as "interveners" for own children.

Tests Used: Peabody Picture Vocabulary, Stanford-Binet, Cattell Infant Intelligence

Design and Results: Pre-post with follow-up. Gain scores significantly better than control group.

PERRY PRESCHOOL PROJECT
Ypsilanti, Michigan

Title I Support: No

Context: Suburban

Target Group Characteristics

Number Served: 24 per year, 2-year cycle

Dates: 1962-66

Age or Grade Range: 3-4 years old

Ethnic Group: Black

Other Pupil Characteristics: Functionally retarded, IQ's 85 or below.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on IQ tests; performance on achievement tests in reading, language, and math.

Facilities: Regular classrooms in public schools; children's homes.

Treatment Duration: 16 1/2 hours weekly for two years prior to kindergarten

Components:

Personnel: Certified teachers with average of 10 years specialized experience.

Curriculum: highly structured thematic units

Strategy: "verbal bombardment"

Environment: Four activity centers in relatively freely structured classroom; 90-minute home visit once a week.

Materials: Manipulative plus "real-world" objects; traditional materials used in unique ways.

Pupil-Teacher Ratio: 6:1

Training: daily planning meetings

Parent Involvement: Weekly home sessions with child; monthly parent group meetings.

Tests Used: Stanford Binet, Peabody Picture Vocabulary, Leiter International Performance, California Achievement Test Battery

Design and Results: Pre-post with follow-up. IQ gain scores better than control group; achievement scores significantly better than control group.

PRESCHOOL PROGRAM
Fresno, California

Title I Support: Yes — **Context:** Urban

Target Group Characteristics

Number Served: 1964-65, 45; growing to 750 over next four years — **Dates:** 1964-68

Age or Grade Range: 3-5 years old — **Ethnic Group:** mostly Mexican-American

Other Pupil Characteristics: Mostly Spanish-speaking; some residing outside Title I target area.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on test of language ability.

Facilities: 27 portable classrooms at 19 elementary school sites

Treatment Duration: Three hours per day/five days per week.

Components:

Personnel: 50 certificated half-time teachers

Curriculum: Emphasis on verbal communication and language development.

Strategy: Teacher-directed small group activities.

Environment: Moderately structured with use of teacher aides and parent volunteers.

Materials: typical preschool

Pupil-Teacher Ratio: 5:1

Training: Monthly staff meetings, study guides and inservice consultation from resource teachers.

Parent Involvement: Instructors in classroom, bimonthly parent meetings; use of parents on frequent field trips; parents' advisory committee met once a month.

Tests Used: Peabody Picture Vocabulary

Design and Results: Pre-post design. The average IQ of 428 pupils in FY 67 was raised from 84.3 to 96.5. This 12.2 IQ gain was statistically significant. In FY 68, the average gain for 452 pupils was 14.7 points from 86.4 to 101.1 -- also statistically significant.

THE PRESCHOOL PROGRAM
Oakland, California

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: approximately 600 annually

Dates: 1966-70

Age or Grade Range: 3-4 years old

Ethnic Group: mostly Black

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on tests of IQ.

Facilities: Regular classrooms in public schools.

Treatment Duration: 3 3/4 hours daily for 9 - 15 months

Components:

Personnel: One teacher and one teacher aide per class plus one parent volunteer; also school-community workers.

Curriculum: Individualized sequential series of learning units, emphasizing language skills.

Strategy: Teacher-directed small group activities.

Environment: Moderately structured with many enrichment activities and field trips.

Materials: typical preschool

Pupil-Teacher Ratio: 15:3 or 4

Training: Pre- and inservice for teachers, aides, school-community workers; daily 30-minute inservice for aides.

Parent Involvement: Volunteers in classroom; monthly parent meetings.

Tests Used: Pictorial Test of Intelligence

Design and Results: Pre-post design. Post scores significantly better than control group.

PROJECT BREAKTHROUGH
Chicago, Illinois

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 102

Dates: 1966-67

Age or Grade Range: 3.5-5.5 years

Ethnic Group: mostly Black

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Stabilization of performance on IQ tests; performance on readiness tests.

Facilities: laboratory school classroom

Treatment Duration: 1 1/2 hours daily for 7-9 months

Components:

Personnel: Responsive environment laboratory supervisors and booth attendants; social caseworkers.

Curriculum: Edison Responsive Environment (ERE), student behavior evokes further stimuli.

Strategy: Transfer of child's discoveries to more formal learning experiences; social work services.

Environment: Highly structured ERE sessions and traditional nursery school experience.

Materials: "Talking Typewriters"

Pupil-Teacher Ratio: varied from 1:1 to 10:1

Training: pre- and inservice instruction

Parent Involvement: none indicated

Tests Used: Stanford-Binet, Peabody Picture Vocabulary, Metropolitan Readiness

Design and Results: Pre-post with follow-up. IQ Gain and performance significantly better than control group.

MALABAR READING PROGRAM FOR MEXICAN-AMERICAN CHILDREN
Los Angeles, California

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: Unknown, preschool through third grade in one school.

Dates: 1966-69

Age or Grade Range: pre-K - third grade

Ethnic Group: mostly Mexican-American

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on achievement tests in reading and language.

Facilities: Regular classrooms in public school.

Treatment Duration: Hours per week unknown; students treated for different lengths of time over five year period.

Components:

Personnel: Ten percent were Mexican-American.

Curriculum: Oral and written language emphasis.

Strategy: Individualized, self-directed approach capitalizing on child's response to internal as well as external stimuli.

Environment: Three "stations", moderate to low structure, from individual work with teacher to self-chosen activity.

Materials: Ginn basal readers, staff-developed bilingual materials.

Pupil-Teacher Ratio: 30:1, reduced by parent volunteers

Training: unknown

Parent Involvement: volunteers in classroom

Tests Used: Stanford Achievement - reading

Design and Results: Pre-post design. Gain scores significantly better than control group.

PS 115 ALPHA ONE READING PROGRAM
New York, New York

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 27

Dates: 1969-70

Age or Grade Range: first grade

Ethnic Group: mostly Spanish-speaking; Greek

Other Pupil Characteristics: Many could not speak fluent English.

Project Characteristics

Measured Cognitive Objectives: Performance on a primary reading test.

Facilities: regular classroom

Treatment Duration: Two hours daily during school year.

Components:

Personnel: one full-time teacher

Curriculum: Game-like phonics approach to decoding words.

Strategy: Programmed success, teacher-directed lessons.

Environment: Moderately structured, no special classroom arrangements; children get regular school program the rest of the day.

Materials: Special "Alpha One" self-contained instructional package.

Pupil-Teacher Ratio: 27:1

Training: None required, materials contain complete kit of lesson plans.

Parent Involvement: none indicated

Tests Used: Gates Primary Reading

Design and Results: Posttest only; scores significantly better than control group.

PROJECT EARLY PUSH
Buffalo, New York

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 650

Dates: 1967-68

Age or Grade Range: 3 years, 9 months - 4 years, 9 months

Ethnic Group: none given

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on readiness tests.

Facilities: Regular classrooms in public and parochial schools.

Treatment Duration: 1/2 day, 5 days per week/9 months

Components:

Personnel: Visiting teacher, home-school coordinator, teacher aides.

Curriculum: Use of a combination of practices found to be successful in other preschools; mostly child directed.

Strategy: Capitalize on learning potential in children's self-chosen activities.

Environment: Low structure, small group.

Materials: Furniture, housekeeping, art, music, and play materials.

Pupil-Teacher Ratio: 15:1

Training: Bimonthly inservice for teachers and aides.

Parent Involvement: Newsletter for parents; class visits urged; parent-teacher conferences and workshops; volunteer Parent-Council meets three times a year.

Tests Used: Peabody Picture Vocabulary

Design and Results: Pre-post design. Forty-eight boys and 48 girls were randomly selected for testing. Pretests were obtained on all but only 35 boys and 24 girls were posttested. These 59 pupils showed a mean mental age gain of 11 months during the 7 months between testings. This produced a mean IQ gain of 10 points from 76 to 86. In terms of national norm percentiles, mean pretest performance was at the 18th percentile, mean posttest performance was at the 28th percentile.

EARLY CHILDHOOD PROJECT
New York, New York

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 160 entered each year and remained for five years.

Dates: 1962-67

Age or Grade Range: pre-K - third grade

Ethnic Group: mostly Black

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on IQ and readiness tests.

Facilities: Laboratory school and regular public school classrooms.

Treatment Duration: five hours per week

Components:

Personnel: One teacher and one college-graduate assistant teacher per class; community aides and social worker.

Curriculum: Development of language and concept skills; inclusion of math and science skills in primary grades.

Strategy: Self-paced, individualized and small-group instruction; much feedback; creative dramatics.

Environment: moderately structured

Materials: Often designed by staff; Deutsch program; many games and manipulatives.

Pupil-Teacher Ratio: unknown

Training: Three weeks pre-service plus inservice for teachers and assistant teachers.

Parent Involvement: Monthly meetings; parents trained to support program at home with games, books, questions.

Tests Used: Stanford-Binet

Design and Results: Pre-post design. IQ gain scores significantly better than control group.

AUGMENTED READING PROJECT
Pomona, California

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 1,230

Dates: 1967-68

Age or Grade Range: first - third grade

Ethnic Group: mostly Mexican-American; Black, some white

Other Pupil Characteristics: Students selected on basis of teacher recommendations and diagnostic test scores.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on reading achievement tests.

Facilities: regular and other classrooms

Treatment Duration: Four months; number of hours varied according to need.

Components:

Personnel: Three counselors, two psychologists, four remedial reading specialists, one "helping teacher," and 36 teacher aides augmented regular teaching staff.

Curriculum: Remedial reading; supplemental to regular classroom instruction.

Strategy: Those with greatest need received individual or small group instruction outside regular classroom; those in regular classroom benefited from services of a shared helping teacher and a nonprofessional classroom aide who assisted with class management and a minimal amount of instruction; all instruction teacher directed; no one teaching method employed.

Environment: moderately structured

Materials: Special professional books and curriculum materials used; all commercially available.

Pupil-Teacher Ratio: 3-6:1 for those receiving special instruction

Training: Intensive pre- and inservice training provided for all staff through conferences, workshops, lectures.

Parent Involvement: Encouraged through psychologist and counselor liaison and parent meetings.

Tests Used: Wide Range Achievement - reading

Design and Results: Pre-post design. A random sample of 288 was drawn for evaluation purposes -- 8 boys and 8 girls from each of the three grades in each of the six schools served in FY 1967. Both pre- and posttest data were obtained on 213. During the six months between testings, grade-equivalent gains ranging from 7 months (third grade girls) to 1 year (first grade boys). Average growth rate was 1.4 months per month. In FY 68, complete data were obtained on 265 pupils. An average growth rate of 1.2 months per month was found during the four-month period between testings. More recently, the program has been extended to encompass grades K through six and has ceased to be successful.

LANGUAGE STIMULATION PROGRAM
Auburn, Alabama

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 32

Dates: 1964-65

Age or Grade Range: first grade

Ethnic Group: Black

Other Pupil Characteristics: Mean IQ of 75 as measured by ITPA; two levels below grade level in language.

Project Characteristics

Measured Cognitive Objectives: Improvement in IQ and language ability

Facilities: laboratory classroom

Treatment Duration: One hour per day, four days per week/10 weeks.

Components:

Personnel: Director was Ph.D. candidate and faculty member at Auburn University; testing personnel were volunteers from Auburn Psychology Department; apparently no aides.

Curriculum: developmental language

Strategy: Students were pulled from their regular classrooms; instruction was in lieu of regular instruction in language; lessons highly structured and sequential; same teaching method used for all.

Environment: highly structured

Materials: Peabody Language Development Kit (lessons 1 through 40); story books.

Pupil-Teacher Ratio: 8:1

Training: Teachers trained in Peabody method.

Parent Involvement: none indicated

Tests Used: Stanford-Binet, Illinois Test of Psycholinguistic Abilities, California Reading Test, Durrell Analysis of Reading

Design and Results: Pre-post with follow-up. IQ and reading performance significantly better than control group.

PROGRAMED TUTORIAL READING PROJECT
Indianapolis, Indiana

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 43

Dates: 1965-66

Age or Grade Range: first grade

Ethnic Group: 60 percent Black, 40 percent white

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on criterion-referenced reading tests.

Facilities: other classroom

Treatment Duration: 1/2 hour daily for one school year

Components:

Personnel: Research director; head supervisor had only three years college and experience as programmer; field supervisors of tutors served as liaisons with school staff; paraprofessionals served as tutors.

Curriculum: Remedial reading to supplement classroom instruction.

Strategy: Student removed from classroom for instruction; tutors' behavior tightly programmed by "lesson plans;" tutors heavily supervised; guided discovery learning; success programmed in.

Environment: highly structured

Materials: Ginn basal reader plus special sequence of lesson plans developed at Indiana University.

Pupil-Teacher Ratio: 1:1

Training: Tutors received 12 hours pre-service training which required 12 additional hours of related home study; 6 hours inservice training also provided; continuous supervision.

Parent Involvement: none indicated

Tests Used: Metropolitan Readiness, Ginn

Design and Results: Pre-post design with control group. Ginn posttest scores were significantly higher for the treatment group than for the controls. Similar results were found in a more recent (1968-69), larger-scale evaluation involving a nationwide sample of 17 school districts. In almost all instances (15 of 17), posttest comparisons favored the treatment children. This was true even in five schools which apparently assigned the more able children to the control group.

SPEECH AND LANGUAGE DEVELOPMENT PROGRAM
Milwaukee, Wisconsin

Title I Support: Yes **Context:** Urban

Target Group Characteristics

Number Served: 136 **Dates:** 1966-67

Age or Grade Range: first - second grade **Ethnic Group:** none given

Other Pupil Characteristics: Mean IQ of 84; low oral language facility as judged by teachers and therapists on basis of oral articulation test.

Project Characteristics

Measured Cognitive Objectives: Performance on tests of verbal language skill.

Facilities: other classrooms

Treatment Duration: Up to three hours per week for 15 weeks.

Components:

Personnel: Supervisor was a speech therapist and licensed in special education with 20 years experience; therapists were state licensed with an average of 7 years experience.

Curriculum: Rich in auditory and verbal stimuli consisting of a sequence of structural units developed by project staff and designed to improve talking and listening skills.

Strategy: Provided small group instruction outside normal classrooms; teacher directive.

Environment: Moderate to highly structured; therapists were flexible in responding to students' needs.

Materials: Some locally developed; others commercially available.

Pupil-Teacher Ratio: 7:1

Training: No pre- or inservice training specified.

Parent Involvement: Parents informed through newsletters and conferences.

Tests Used: Ammons Quick Test of Verbal-Perceptual Intelligence

Design and Results: Posttest with matched control group. Small but statistically significant differences in posttest scores favored the treatment group over the controls. No significant differences, however, were found in four more recent evaluations conducted between 1967 and 1969.

MORE EFFECTIVE SCHOOLS
New York, New York

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: approximately 16,600 per year

Dates: 1965-67

Age or Grade Range: pre-K - sixth grade

Ethnic Group: majority Black or Puerto Rican

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on achievement tests in reading.

Facilities: regular classrooms

Treatment Duration: 1/2 day daily, Pre-K, full day daily, grades K - sixth/ one year.

Components:

Personnel: Staffs of each participating school included social workers, psychiatrists, speech improvement teachers, psychologists, community relations coordinators, and paraprofessional aides in addition to teaching and administrative personnel.

Curriculum: None special; emphasis on language skills and reading.

Strategy: Reorganized and expanded the teaching, administrative, and supportive staffs to better serve students in all areas of need; students were heterogeneously grouped in classes, offered more individual and small group instruction; provided remedial, tutorial, and enrichment instruction during regular school and after school hours; encouraged teachers to employ innovative techniques.

Environment: varied

Materials: Normal quota supplied schools was supplemented; wide variety of audiovisual equipment was purchased.

Pupil-Teacher Ratio: 15-22:1

Training: Preservice orientation for teachers and administrators; local colleges sponsored a variety of inservice activities and awarded scholarships for course study.

Parent Involvement: Community relations coordinators planned meetings, activities, and courses which many parents attended.

Tests Used: Metropolitan Achievement - reading

Design and Results: Pre-post design with control groups. Gain scores in some grades were better than control groups and national norms. Many more recent evaluations have been made of the program and have reached similar conclusions. In general, gains made in the program exceed gains made by matched control groups but fall short of the month-for-month rate expected of average children in regular school programs.

PROJECT CONCERN
Hartford, Connecticut

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 260

Dates: 1967-68

Age or Grade Range: K - sixth grade

Ethnic Group: 4/5 Black

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on tests of IQ, readiness, and achievement in basic skills.

Facilities: Other classrooms in suburban schools.

Treatment Duration: full day daily for one year

Components:

Personnel: Director of inservice training for aides, coordinator of aides, volunteer mother aides.

Curriculum: Same as that normally taught in the receiving school.

Strategy: Bused children to a suburban receiving school for full day's instruction and provided them with support from a team of one teacher and one aide who accompanied them to the school and provided services which varied from school to school.

Environment: varied

Materials: none mentioned

Pupil-Teacher Ratio: 25:1

Training: Monthly inservice workshop to train aides.

Parent Involvement: volunteer mother aides

Tests Used: Wechsler Intelligence, Primary Mental Abilities, Metropolitan Readiness, Iowa Test of Basic Skills, Sequential Test of Educational Progress

Design and Results: Pre-post design with a control group. IQ gains and verbal achievement gains were significantly better for program participants than for comparable control children in grades K-3. The program was not successful in grades 4 and 5. Growth rates in both original and subsequent evaluations were less than month-for-month.

SCHOOL AND HOME PROGRAM
Flint, Michigan

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 1,100

Dates: 1961-62

Age or Grade Range: K - sixth grade

Ethnic Group: Black

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on reading achievement tests.

Facilities: children's homes

Treatment Duration: Evenings, daily for five months.

Components:

Personnel: Some mothers were aides and served as home visitors, counselors, and attendance officers.

Curriculum: Direct involvement of parents in the at-home learning experiences of their children.

Strategy: Regular school teachers assigned special reading materials and exercises to students to be done at home and provided study guides for parents so that they could assist the students in developing good study habits and improve reading skills.

Environment: varied

Materials: Commercially available materials used in different ways; some locally developed ones.

Pupil-Teacher Ratio: not applicable

Training: Teachers met monthly to discuss progress, problems, and materials use.

Parent Involvement: Both in planning and implementing program.

Tests Used: Gates Revised Reading

Design and Results: Pre-post design. Performance significantly better than control group and disadvantaged norm.

AFTER SCHOOL STUDY CENTERS
New York, New York

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 30,000

Dates: 1966-67

Age or Grade Range: second - sixth grade

Ethnic Group: mostly Black or Puerto Rican

Other Pupil Characteristics: One year or more retarded in reading or math; not receiving remedial help in school.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on reading achievement tests.

Facilities: other classrooms

Treatment Duration: Up to 10 hours a week for 7 months of regular school year.

Components:

Personnel: No special personnel employed; no aides.

Curriculum: remedial reading

Strategy: Teachers tutored students individually and in small groups and assisted them with homework; no single teaching technique was characteristic of the program; offered two hours each afternoon; attendance voluntary.

Environment: moderately structured

Materials: primarily SRA Reading Labs

Pupil-Teacher Ratio: varied

Training: none mentioned

Parent Involvement: none indicated

Tests Used: Metropolitan Reading Test

Design and Results: Pre-post design (with a control group in FY 65). Performance of ASSC pupils was significantly better than the control group in FY 65 and growth was at the national norm month-for-month rate. In FY 67 growth was .7 months per month -- somewhat above the disadvantaged norm. There was no control group in FY 67.

INTENSIVE READING INSTRUCTIONAL TEAMS
Hartford, Connecticut

Title I Support: Yes **Context:** Urban

Target Group Characteristics

Number Served: 500 **Dates:** 1967-68

Age or Grade Range: third - sixth grade **Ethnic Group:** none given

Other Pupil Characteristics: Reading below grade level with potential for growth; able to work within a group.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on reading achievement tests.

Facilities: other classrooms

Treatment Duration: Three hours daily for 10 weeks of regular school year.

Components:

Personnel: One reading specialist, two reading teachers per team; no aides.

Curriculum: remedial reading

Strategy: Teacher directive; teams provided one hour each of instruction in phonics/word attack, basal reading vocabulary and comprehension, individualized literature and library orientation each morning.

Environment: moderately to highly structured

Materials: Some locally developed packets; some commercially available.

Pupil-Teacher Ratio: 15:1

Training: each afternoon for teachers

Parent Involvement: Forty percent visited centers at least once for conferences.

Tests Used: California Reading Achievement

Design and Results: Pre-post design. Grade-equivalent gains over the 10-week treatment period ranged from 7 months to 1.5 years, greatly exceeding the national norm. In more recent years the project has been modified to serve first-grade children. Evaluation evidence shows continued success but grade-equivalent scores are not available.

PROJECT CONQUEST
East St. Louis, Illinois

Title I Support: Yes **Context:** Suburban

Target Group Characteristics

Number Served: 1,089 **Dates:** 1969-70

Age or Grade Range: first - sixth grade **Ethnic Group:** mostly Black

Other Pupil Characteristics: Capable students whose reading problems could not be helped by regular classroom teachers; one year or more below grade level in reading; potential to read at grade level.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on reading achievement tests.

Facilities: Three clinics and other classrooms.

Treatment Duration: Grades one - three, 3/4 hour a day, 4 days per week/7 1/2 mos.
Grades four - six, 3/4 hour a day, 2 days per week/7 1/2 mos.

Components:

Personnel: One reading specialist; four reading teachers and one aide per clinic; nine specially trained reading teachers shared by "other classrooms;" three school community aides; four supervisors.

Curriculum: remedial reading

Strategy: Diagnosis in clinics and remediation either in "other classrooms" (grades one - three) or clinics (grades four - six); supplemental to regular school reading program; guaranteed success built in; remediation individualized; teacher directive.

Environment: moderately to highly structured

Materials: varied; all commerically available

Pupil-Teacher Ratio: 6:1

Training: Pre-service training two weeks to one year; inservice training one day per week.

Parent Involvement: Classrooms observers; regularly scheduled conferences; home visits.

Tests Used: Gates Primary Reading, Gates Advanced Primary Reading, Gates Survey, Gates-MacGinitie

Design and Results: Pre-post design. In FY 69 project participants made grade-equivalent gains of 9.4 months in a 7.5 month period -- a growth rate 25% greater than the national norm. In FY 70 the mean gain was 1.04 years, exceeding the normal expectation by 39%.

PROJECT MARS
Leominster, Massachusetts

Title I Support: Yes

Context: Suburban

Target Group Characteristics

Number Served: 212

Dates: 1969-70

Age or Grade Range: first - fourth grade

Ethnic Group: Irish, French, Italian, Puerto Rican

Other Pupil Characteristics: Performance in reading was below potential ability as determined by diagnostic instruments.

Project Characteristics

Measured Cognitive Objectives: Reduction of discrepancy between ability and performance in reading.

Facilities: other classroom

Treatment Duration: 45 minutes daily for seven months

Components:

Personnel: One reading specialist, seven teachers specially trained in reading, no aides.

Curriculum: remedial reading

Strategy: Teacher directive, individual diagnoses, group remediation; supplemental to regular classroom instruction; students released from classrooms; no one teaching technique was characteristic of the program but all differed from tradition.

Environment: moderately structured

Materials: Commercially available but other than those used in regular classrooms.

Pupil-Teacher Ratio: 6:1 or better

Training: Inservice once a month and participation in summer reading institute.

Parent Involvement: Teacher conferences and 27 member parent advisory council.

Tests Used: Metropolitan Achievement

Design and Results: Pre-post design. In both FY 69 and FY 70 gain scores on both the Reading and Word Knowledge subtests at all grade levels were statistically significant and exceeded the disadvantaged norm. With only a few exceptions (Reading in grades 3 and 4, FY 69, and Word Knowledge in grade 4, FY 70), gains exceeded month-for-month.

SELF-DIRECTIVE DRAMATIZATION PROJECT
Joliet, Illinois

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 107

Dates: 1964-65

Age or Grade Range: first - fourth grade

Ethnic Group: mostly Black

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on reading achievement tests.

Facilities: regular classroom

Treatment Duration: Three to five times a week for seven months; two sessions each 3 1/2 months with an intermission.

Components:

Personnel: No special staff; no aides.

Curriculum: dramatic readings

Strategy: Student directive; students dramatized stories they read portraying self-chosen characters. Students worked in small groups (six). Remainder of day normal.

Environment: relatively unstructured

Materials: 200 commercially available high interest level storybooks.

Pupil-Teacher Ratio: 25 or 30:1

Training: Some inservice, amount not given.

Parent Involvement: none indicated

Tests Used: Gray-Votaw-Rogers Achievement - reading

Design and Results: Pre-post design. Performance significantly better than control group and national norm.

AFTERNOON REMEDIAL AND ENRICHMENT PROGRAM
Buffalo, New York

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 4,365

Dates: 1966-67

Age or Grade Range: third - eighth grade

Ethnic Group: mostly Black; some white, Puerto Rican.

Other Pupil Characteristics: Most tested one or more years below grade level on achievement tests.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on achievement tests in math and reading.

Facilities: other classrooms

Treatment Duration: 1 1/2 hours per day, 3 days per week/5 months

Components:

Personnel: No special staff; regular teachers working after regular hours.

Curriculum: remedial reading and math

Strategy: Teacher directive; no one teaching method was characteristic of the program; taught individually or in small groups.

Environment: moderately structured

Materials: Those used during regular school day and some additional reading materials.

Pupil-Teacher Ratio: 6:1

Training: none indicated

Parent Involvement: Planning and revising of program.

Tests Used: California Reading, California Achievement

Design and Results: Pre-post design. During FY 67, average grade-equivalent gains in both reading and arithmetic at each grade level were equal to or greater than month-for-month. Pooled across grade levels the 802 children for whom data were available averaged a 1.09 month-per-month rate of gain in reading while the rate was 1.30 month per month for 944 children in arithmetic.

FERNALD SCHOOL REMEDIATION OF LEARNING DISORDERS PROGRAM
Los Angeles, California

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 220

Dates: 1966-67

Age or Grade Range: second - eighth grade

Ethnic Group: 2/3 Black, 1/3 Mexican American or white

Other Pupil Characteristics: All male, at least 1.5 years behind national norm in school achievement; of average intelligence; non-paying in a school generally serving tuition only students.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on achievement tests in reading, language, and math.

Facilities: laboratory school

Treatment Duration: 6 hours daily, for 9 months

Components:

Personnel: Teachers and supervisors certified and specially trained in diagnosing and treating learning disorders; aides were graduate and undergraduate university students.

Curriculum: comprehensive remedial in all areas

Strategy: Students bused to lab school for total program; student directive, highly individualized; remediation and evalution followed diagnosis.

Environment: highly structured

Materials: Commercially available; comprehensive stock.

Pupil-Teacher Ratio: 5:1

Training: Extensive pre- and inservice training with some use of videotapes.

Parent Involvement: Part of remediation when necessary.

Tests Used: Wechsler Intelligence Scale, California Achievement - reading, math, language

Design and Results: Pre-post design. Performance significantly better than control group and national norm.

PLUS PROGRAM
Buffalo, New York

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 7,436

Dates: 1967-68

Age or Grade Range: first - eighth grade

Ethnic Group: mostly Black; 1/4 white or Puerto Rican

Other Pupil Characteristics: Most were one to two years below grade level in school achievement.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on achievement tests in reading and math.

Facilities: other classroom

Treatment Duration: One to 1 1/2 hours daily (30 to 45 minutes in each subject) for 7.5 months in reading and 8 months in math.

Components:

Personnel: Teachers had regular or temporary certification (not special credientials), but did not hold regular teaching positions in schools.

Curriculum: corrective reading, remedial math

Strategy: Teachers provided small group and individual instruction during regular school day, but as supplement to regular classroom instruction; assisted regular classroom teachers in diagnosing problems for referral. No single teaching method employed.

Environment: moderately structured

Materials: Commercially available texts and games, specially ordered.

Pupil-Teacher Ratio: 5-6:1

Training: One week pre-service training with reading specialists plus attendance at service institutes in summer.

Parent Involvement: none indicated

Tests Used: California Achievement - reading, math

Design and Results: Pre-post design. In FY 67, a representative sample of program participants made a mean reading achievement gain of 8.9 months during the 7.5 months between testings and an arithmetic achievement gain of 7.3 months. In FY 68 the mean grade-equivalent gains were 8.52 months in reading (over a 7.5-month period) and 9.12 months in arithmetic (over an 8-month period). The FY 68 gains in both reading and arithmetic exceeded national norms by approximately 14%.

DIAGNOSTIC READING CLINICS
Cleveland, Ohio

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 532

Dates: 1969-70

Age or Grade Range: fourth - seventh grade

Ethnic Group: none given

Other Pupil Characteristics: More than one year below expected reading level; none with "low" IQ's.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on reading achievement tests.

Facilities: clinics and regular classrooms

Treatment Duration: One hour daily for various periods of time ranging from 2.5 to 5.1 months.

Components:

Personnel: Certified reading specialists, speech therapists, psychologists, social workers, and aides from community.

Curriculum: remedial reading

Strategy: Clinic provides both diagnostic and remediation services and follow-up supportive services to regular classrooms; student directive; individualized.

Environment: highly structured

Materials: Commercially available but specially applicable to needs of program.

Pupil-Teacher Ratio: 1:1

Training: Monthly inservice training held for regular classroom teachers.

Parent Involvement: Attended monthly meetings; formally evaluated program; supported students.

Tests Used: Gates-MacGinitie Reading

Design and Results: Pre-post design. Performance significantly better than national norm.

ELEMENTARY READING CENTERS
Milwaukee, Wisconsin

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: over 1,000

Dates: 1966-67

Age or Grade Range: fourth - eighth grade

Ethnic Group: both Black and white

Other Pupil Characteristics: Average or above average IQ; one year or more retarded in reading.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on reading achievement tests.

Facilities: other and regular classrooms

Treatment Duration: 30 minutes daily for approximately 7 months (until reading at grade level).

Components:

Personnel: Supervisors and head teachers were credentialed and licensed both as reading specialists and specialized teachers; 2/3 of center teachers were also credentialed and licensed as reading specialists with average of 12 years experience.

Curriculum: remedial reading

Strategy: Individual diagnosis and group remediation provided at centers until students were reading at grade level; center staff also assisted regular classroom teachers in identifying problem cases and in supporting students upon their return to regular classrooms; no one teaching method employed.

Environment: moderately to highly structured

Materials: plentiful and commercially available

Pupil-Teacher Ratio: 5-8:1

Training: none indicated

Parent Involvement: none indicated

Tests Used: California Reading, Wide Range Achievement

Design and Results: Pre-post design. During the first semester of the 1966-67 school year, reading test data were obtained on more than 300 participants none of whom was in the treatment for more than 5 calendar months. The mean Silent Reading gain was 6.4 months while the oral reading gain was 6.9 months. A second posttest was conducted near the end of the second semester. The mean length of program participation for the approximately 500 pupils tested was 7.4 months. Gains were 7.6 months for Silent Reading and 8.9 months for Oral Reading. Evaluations conducted since FY 67 have failed to produce any evidence of impact whatsoever.

THE LAFAYETTE BILINGUAL CENTER
Chicago, Illinois

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 65

Dates: 1969-70

Age or Grade Range: sixth - eighth grade

Ethnic Group: mostly Puerto Rican

Other Pupil Characteristics: Spoke Spanish at home; recent arrivals to U. S.; normal IQ's.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on tests of IQ, ability, and achievement in reading, language, and math.

Facilities: laboratory school - "school-within-a-school"

Treatment Duration: Six hours daily for eight months each year up to three years.

Components:

Personnel: Classroom teachers and supervisors were bilingual and most were credentialed to teach English as a Second Language (ESL). Bilingual aides assisted teachers but not with instruction. Resource teacher and school-community representative worked closely with parents.

Curriculum: Developmental reading and language; minimum of two hours daily.

Strategy: A full school program was offered, initially taught in Spanish with eventual transition to English; nongraded; individual diagnosis preceded remediation; individualized or small group instruction; 15 volunteer Anglo students participated in program serving as models and tutors.

Environment: Academic sessions highly structured; other sessions low to moderately structured.

Materials: Most were specially developed by staff.

Pupil-Teacher Ratio: 16:1

Training: Pre-service training for aides; inservice training for everyone one hour, twice a month.

Parent Involvement: Home visitations; attended adult classes in English; served on advisory council; informally evaluated program.

Tests Used: Short Test of Educational Ability, Test of General Ability, Metropolitan Achievement - reading, math, language

Design and Results: Pre-post design. Program participants showed a statistically significant median IQ gain of 8 points. They made achievement gains greater than month-for-month in English reading, spelling, language, and arithmetic problem solving and in Spanish reading and arithmetic problem solving.

COMMUNICATION SKILLS CENTER PROJECT
Detroit, Michigan

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 2,845

Dates: 1966-67

Age or Grade Range: second - eleventh grade

Ethnic Group: mostly Black

Other Pupil Characteristics: none given

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on reading achievement tests.

Facilities: clinics and other classrooms

Treatment Duration: Approximately two hours per week for one or two semesters; summer session - one hour daily.

Components:

Personnel: Reading diagnosticians, psychologists, social therapists, and lay aides as well as remedial reading teachers.

Curriculum: remedial reading

Strategy: Individual diagnoses conducted at clinics; remediation provided individually or in small groups at clinics or in special classrooms.

Environment: moderately to highly structured

Materials: Specially developed at a reading lab in one of the clinics.

Pupil-Teacher Ratio: 8:1 in classrooms; 3:1 in clinics

Training: none indicated

Parent Involvement: none indicated

Tests Used: Stanford Reading Achievement

Design and Results: Pre-post design. Reading grade-equivalent gain scores for junior and senior high school project participants during FY 67 exceeded both their own pretreatment growth rates and national norms (month-for-month). No consistent evidence of success was found at the elementary school level. Since FY 67 the project has been implemented only at the elementary school level and all evaluations have continued to produce negative results.

REMEDIAL READING LABORATORIES
El Paso, Texas

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 824

Dates: 1969-70

Age or Grade Range: fourth - twelfth grade

Ethnic Group: mostly Mexican-American

Other Pupil Characteristics: Average intelligence; 1 to 1.5 years below grade level in reading achievement.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on tests of basic skills.

Facilities: other classrooms

Treatment Duration: Approximately one hour daily for eight months.

Components:

Personnel: Counselors trained in diagnostic techniques referred students to lab teachers; half of the lab teachers were credentialed reading specialists; no aides.

Curriculum: remedial reading

Strategy: Use of special selection and scheduling procedures when diagnosing problems at labs; provision for systematic instructional planning and individualized instruction in labs; supplemental to classroom; access to reading resource centers.

Environment: highly structured

Materials: plentiful and commercially available

Pupil-Teacher Ratio: 8:1

Training: Approximately 27 hours of pre- and inservice training.

Parent Involvement: none indicated

Tests Used: Comprehensive Test of Basic Skills

Design and Results: Pre-post design. During FY 70, the 677 public school children for whom both pre- and posttest data were available showed a reading grade-equivalent gain of 1.21 years during the eight-month period between testings. Evaluations conducted using FY 68 and FY 69 data showed similar gains (actually somewhat higher) on comparable standardized achievement tests.

HIGHER HORIZONS 100
Hartford, Connecticut

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 100

Dates: 1969-70

Age or Grade Range: ninth grade

Ethnic Group: none given

Other Pupil Characteristics: Average intelligence; one to three years retarded in reading; willing to participate.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on tests of achievement in reading and writing skills.

Facilities: laboratory school; "school-within-a-school"

Treatment Duration: 3 3/4 hours daily for 8 months

Components:

Personnel: Two teachers were language specialists; one counselor worked full time with just these 100 students providing comprehensive services; one graduate student assisted with clerical duties, testing, and instruction.

Curriculum: Developmental and remedial writing and reading.

Strategy: Provided a comprehensive full day program in a demonstration school with intensive language training included in all academic instruction; taught by a special instructional team.

Environment: moderately structured

Materials: plentiful and commercially available

Pupil-Teacher Ratio: 12-13:1

Training: none indicated

Parent Involvement: Counselor visited parents when necessary.

Tests Used: Metropolitan Achievement, Iowa Silent Reading, SRA Writing Skills

Design and Results: Pre-post design. Performance significantly better than national norm.

PROJECT R-3
San Jose, California

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 70

Dates: 1967-68

Age or Grade Range: eighth - ninth grade

Ethnic Group: mostly Mexican-American

Other Pupil Characteristics: English speaking; at least one year below grade level but not more than two below in either reading or math.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on achievement tests in reading and math.

Facilities: other classrooms

Treatment Duration: Three morning class periods daily for a year.

Components:

Personnel: Full time reading specialist; full time electronic technician; no aides.

Curriculum: Developmental and remedial reading and math.

Strategy: Provided a special morning academic program in reading and math with applications to the solution of simulated or real world problems; normal junior high program in afternoon; provided several extended highly structured field trips to supplement instructional lessons.

Environment: moderately to highly structured

Materials: Some commercially available; others specially developed by Lockheed.

Pupil-Teacher Ratio: 15:1

Training: none indicated

Parent Involvement: Active participation in classroom activities, field trips, and meetings.

Tests Used: California Achievement - reading, math

Design and Results: Pre-post design. Performance significantly better than control group and national norm.

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SUMMER JUNIOR HIGH SCHOOLS
New York, New York

Title I Support: Yes__ Context: Urban

Target Group Characteristics

Number Served: unknown Dates: Summer 1967

Age or Grade Range: seventh - ninth grade Ethnic Group: mostly Black and Puerto Rican

Other Pupil Characteristics: At least two years retarded in reading or failed mathematics.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on achievement tests in reading and math.

Facilities: other classrooms

Treatment Duration: 1 1/2 hours daily for 4 weeks for each subject

Components:

Personnel: Regular teachers, counselors, and administrators employed; aides were high school graduates from impoverished communities in need of financial assistance to continue their education.

Curriculum: remedial reading and math

Strategy: Used conventional teaching techniques; grouped students by ability for reading but by grade for math.

Environment: Highly structured; a special handbook detailed procedures to be followed.

Materials: Some commercially available; others specially developed by project staff.

Pupil-Teacher Ratio: 20:1

Training: none indicated

Parent Involvement: none indicated

Tests Used: Metropolitan Achievement - reading, math

Design and Results: Pre-post design. Evaluations conducted from 1967 through 1970 have consistently shown that project participants made statistically significant average gains in both reading and arithmetic of at least 3 (and in one case as many as 9) grade-equivalent months during the 5.5 week treatment period. Normative data for intensive summer programs of this type are not available, but this project is judged to be successful.

COLLEGE BOUND PROGRAM
New York, New York

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 2,000

Dates: Summer 1967

Age or Grade Range: ninth - tenth grade

Ethnic Group: mostly Black and Puerto Rican

Other Pupil Characteristics: Good attendance and behavior records; likely to enter only a general high school program; 25 percent initially scored above grade level, 50 percent scored at grade level or two years below, remainder scored even lower in reading and math.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on achievement tests in reading and math.

Facilities: other classrooms called centers

Treatment Duration: Three hours daily for six weeks.

Components:

Personnel: Each guidance counselor served 100 students full time in the summer; community aides served as family-program liaisons; college student aides served as teaching assistants.

Curriculum: Developmental and remedial reading and math.

Strategy: Motivated students to pursue a college prep curriculum and provided intensive individualized instruction to assist them in realizing this goal. Local colleges and universities committed themselves to admitting and providing financial aid for a certain percentage of participants.

Environment: varied

Materials: none mentioned

Pupil-Teacher Ratio: approximately 20:1

Training: none indicated

Parent Involvement: Community aides explained program to families and assisted them in finding medical services.

Tests Used: Stanford Achievement - reading, math

Design and Results: Pre-post design. Data from summer school sessions from 1967 through 1970 generally showed grade-equivalent gains exceeding the national norm expectation of month-for-month in both reading and math. While results on single subtests were occasionally negative, the general pattern was clearly positive and was supported by results obtained on the New York Regents Examinations. All evidence for the regular school year portion of the program was negative.

EXPANDED LANGUAGE ARTS PROGRAM
Buffalo, New York

Title I Support: Yes

Context: Urban

Target Group Characteristics

Number Served: 1,884

Dates: 1966-67

Age or Grade Range: seventh - twelfth grade

Ethnic Group: none given

Other Pupil Characteristics: Fifty percent spoke Southern rural dialect; 20 percent spoke Italian and 1 percent spoke Spanish at home; 29 percent spoke standard English; 85 percent achieving in lower third of class.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on tests of language achievement.

Facilities: regular classrooms

Treatment Duration: One class period daily for nine months.

Components:

Personnel: No special personnel.

Curriculum: Remedial language arts - speaking and writing, not grammar.

Strategy: Decreased the pupil-teacher ratio in language arts classes by hiring more teachers; provided an individualized program; teachers closely supervised.

Environment: moderately structured

Materials: Commercially available; heavy use of audiovisuals.

Pupil-Teacher Ratio: 10:1

Training: One week pre-service; monthly inservice meetings; weekly observations and discussions.

Parent Involvement: none indicated

Tests Used: Sequential Tests of Educational Progress, California Language Test

Design and Results: Pre-post design. The 458 high school pupils for whom pre- and posttest data were available showed grade-equivalent gains of slightly more than 1 year on the California Language Test during the 7-month period between testing. This gain is equivalent to a growth rate of 1.48 months per month. Seventh and eighth grade students made no significant progress on the California test and neither junior or senior high school pupils showed significant gains on the STEP.

HOMEWORK HELPER PROGRAM
New York, New York

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 410 students; 240 tutors

Dates: 1963-64

Age or Grade Range: third - sixth grades, students
tenth - twelfth grades, tutors

Ethnic Group: At least 50 percent Puerto Rican, 30 percent Black - students; 19 percent Puerto Rican, 18 percent Black - tutors.

Other Pupil Characteristics: Students were retarded in reading, lacking independent study skills; tutors had IQ over 100, reading at grade level or better, potential dropouts, not necessarily economically disad.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on reading tests.

Facilities: other classrooms, after school

Treatment Duration: Two or four hours per week for five months - students; seven months - tutors.

Components:

Personnel: Master teachers supervised the centers and trained the tutors, but did not teach. Grade school graduates served as clerical aides.

Curriculum: remedial reading

Strategy: High school students were paid an hourly wage to tutor elementary school students in reading and assist them with homework; it was assumed that both tutors and students would benefit.

Environment: low to moderate structure

Materials: Commercially available but generally not used in regular classrooms.

Pupil-Teacher Ratio: 1:1

Training: Tutors trained using specially developed manual during a two week orientation period and weekly Monday workshops.

Parent Involvement: none indicated

Tests Used: New York Tests of Growth in Reading (Students); Iowa Silent Reading (Tutors)

Design and Results: Pre-post design. Performance of both students and tutors was significantly better than control group and national norms.

SUMMER UPWARD BOUND
Terre Haute, Indiana

Title I Support: No

Context: Urban

Target Group Characteristics

Number Served: 76

Dates: Summer 1966

Age or Grade Range: tenth grade

Ethnic Group: 55 percent Black, 45 percent white

Other Pupil Characteristics: Unmarried; college potential as judged by parents and counselors; high school grade point average of 2.17.

Project Characteristics

Measured Cognitive Objectives: Improvement in performance on ability tests in reading, math, and abstract reasoning.

Facilities: laboratory school

Treatment Duration: All day, daily for eight weeks of summer.

Components:

Personnel: Ph.D. director; full-time counselor supervised testing and dorm counselors; resident dorm counselors and tutors were college students.

Curriculum: Developmental and remedial language arts, math, study skills.

Strategy: Provided "highly" structured innovative program of academic and extracurricular activities to students living in residence on college campus in the hope of motivating them to continue their education.

Environment: highly structured

Materials: Some commercially available, others developed locally.

Pupil-Teacher Ratio: none given

Training: none indicated

Parent Involvement: none indicated

Tests Used: Differential Aptitude Test

Design and Results: Pre-post design. Gain scores statistically significant.

APPENDIX Q

SUMMARY

Inner-city Children Can Be Taught To Read: Four Successful Schools /1

Description

The Council on Basic Education examined four inner city schools to determine the reasons for success in teaching disadvantaged children to read. The four schools which had appropriate data and success were:

New York, New York	PS 11
	PS 129
Kansas City, Mo.	Woodland School
Los Angles , Calif.	Ann Street School

Achievement Results and Factors

Success was measured by third graders achieving a national grade-level norm or better as a median and an unusually low percentage of non-readers. Success at these schools required from 3 to 9 years. Factors that seem to account for their success are:

- Strong leadership
- High expectations
- Good atmosphere
- Strong emphasis on reading.
- Additional reading personnel
- Use of phonics
- Individualization
- Careful evaluation of pupil progress.

Not essential to the success of the 4 schools are:

- Small class size
- Achievement grouping
- High quality of teaching.
- School personnel of the same ethnic background as the pupils.
- Pre-school education
- Outstanding physical facilities.

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[1]Weber, George, Inner-city Children Can Be Taught to Read: Four Successful Schools, Council for Basic Education, October, 1971. Source: 76.

APPENDIX R

SUMMARY

BEGINNING READING AND MATH IN PS 133, NEW YORK CITY

Description of Study

PS 133 in Harlem initiated a beginning reading and mathematics program based on the approach and methodology developed by Dr. Caleb Gattegno as Words in Color and Mathematics in Color. The aims of the study were:

a. mastering the skill of reading with comprehension;
b. using the written language to express experiences with which they are familiar;
c. mastering computational operations with numbers of any size and any base and applying these skills to their everyday experience;
d. enjoying school work, as represented by the volume of free composition produced by the child in English and mathematics.

Achievement Results

Reading: Comparison of Metropolitan Achievement Test Scores for Grades 2 and 3 (Mean Grade Equivalents)

Mean Score Equivalent	Grade 2		Grade 3	
	1967-68	1968-69	1967-68	1968-69
PS 133 Mean	2.6	2.8	2.9	3.5
District Mean	2.3	2.3	3.0	3.1
Citywide Mean	2.7	2.8	3.7	3.6

Arithmetic: Comparison of Metropolitan Achievement Test Scores for Grade 3 (Mean Grade Equivalents)

Mean Score Equivalent	1968-69	1969-70
PS 133 Mean	2.8	3.2
District Mean	3.0	3.2
Citywide Mean	3.5	3.5

Cost and the Results

For reading in 1968-69 there were 89 students in grade 2 and 71 in grade 3 for a total of 160 students. The total cost of the program for 1968-1969, other than normal school expenditures was 37,884 or $237 per pupil.

Source: 73.

APPENDIX S

Summary

Input and Output in California Compensatory Education Projects

This summary briefly presents the findings of the recent study by Herbert J. Kiesling which analyzes the relationship between process program organization, and achievement gains in California compensatory education projects.[1]

Issue: Is there a Relationship Between Cost/Intensity and Probability of Success?

A random sampling of 42 projects in 37 school districts was used as the basis for this analysis. Test data for approxiamtely 10% of California's 125,000 Title I children in 1969-70 were studied. Scores from the Stanford Reading Test were correlated with teaching strategies, intensity of instruction, patterns of coordination of project, personnel and other variables. These data on the educational process were obtained through questionnaires administered through personal interviews of project personnel.

Briefly, "the findings were that the amount of instruction given by trained reading specialists is consistently related to pupil gains. There was some evidence to show that planning time and instruction by paraprofessional teaching personnel aiding the regular classroom teacher were also related to gains."[2]

The average gain for children in the projects studied was .87 months per month of gain; this is .17 months gain greater than the normal rate of .7 months per month for disadvantaged children. The gain was substantially greater in projects using reading specialists. The multi-regression analysis used by Kiesling found that the minutes of instruction by the diagnostic reading specialist were related consistently to the performance of children with about 30 minutes of individual equivalent instruction per week.[3] In addition, when costs were assigned to input variables - for example $12,000/year for a reading specialist - it was found that "an expenditure of $300 per pupil by a specialist will bring these children / disadvantaged Title I children / on the average to a rate of gain in reading near the national norm. This would be somewhat more probable if the specialist is assisted by paraprofessionals working in the pupil's regular classroom."[4]

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[1] Kiesling, Herbert J., Input and Output in California Compensatory Education Projects, The Rand Corporation, R781-CC/RC, October, 1971. Source: 74.

[2] Ibid., summary.

[3] Testimony of Herbert J. Kiesling, before Senate Educational Subcommittee, April 6, 1972.

[4] Ibid.

Limitations of the Data

Although the sample is reasonably representative of the state and minorities are somewhat overrepresented in terms of projects, the sample did not contain large city "hard-core" situations. Thirteen of the forty-two projects in the study which had the best reading gains, "were in schools where the percentage of Title I children of total school enrollment was 50% or less."[1]

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[1]Testimony of Herbert J. Kiesling, before Senate Educational Subcommittee, April 6, 1972.

APPENDIX T

EFFECTS OF DESEGREGATION ON STUDENT ACADEMIC ACHIEVEMENT: A RESEARCH REVIEW

This analysis of the academic effects of desegregation focuses on one extremely important aspect of school desegregation. Other considerations--the possible effects of desegregation upon self-concept, adaptability to living in a multi-racial society, educational attainment, and occupational and income levels, for example--as well as the moral and legal aspects of desegregation, are important issues that are outside the scope of this review.

First, studies on the effects of individual social class, school social class, racial composition and other variables on academic achievement will be reviewed. Second, long-term studies of achievement in school districts before and after desegregation will be examined. Finally, the critical question of what research shows us about how desegregation works best will be reviewed.

School Social Class and Academic Achievement

Research findings clearly show the strong relationship between the socio-economic status (SES) of a student--that is, the social class of his family--and his academic achievement. Students (especially blacks) from advantaged families score higher on the average on achievement tests than students from disadvantaged families. However, if individual SES is controlled, there is strong evidence that disadvantaged black students achieve higher if they attend schools with more advantaged students. The educational effectiveness of this "student body" or school SES effect is shown in:

(1) The Coleman Report and its many reanalyses, which are remarkably consistent in this finding.

(2) Alan Wilson's sophisticated longitudinal study, "Educational Consequences of Segregation in a California Community" in the U.S. Commission of Civil Rights report Racial Isolation in the Public Schools.

(3) A study by J. A. Michael of 35,000 seniors in a nationally representative sample of 518 high schools.

(4) An unpublished longitudinal study of eight Pittsburgh schools conducted by Nancy St. John and M.S. Smith.

The research showing a school SES effect on achievement is remarkably consistent. One of the major arguments against the Coleman school SES finding is that, because of the cross-sectional design of the study, the school SES effect may in fact represent a selection bias and not a real educational effect. Marshall Smith suggests that biases and selection factors may explain Coleman's student body effects, but he does not document his selection hypothesis.* The continued presence of the school SES effect in the longitudinal studies strengthens the validity of the Coleman findings.

Different studies diverge when they attempt to examine additional factors such as school quality, desegregation, and school racial climate effects. These studies will be examined later, but it should now be emphasized that the attempt to attribute increments of educational gain to various school quality, desegregation, and social structure factors can obscure the major policy findings:

(1) Whatever it is that happens in middle class schools, after controlling for individual SES, disadvantaged black students achieve higher on the average in middle class than in lower class schools.

(2) Middle class schools attended by black students are predominantly white schools in most cases.

(3) There is an educational value of school desegregation for improving black student achievement.

Generally, the school SES effect is interpreted as beneficial to disadvantaged blacks through exposure to students from homes with higher educational backgrounds and higher educational aspirations. Some researchers also suggest that teachers in middle class schools more commonly have expectations for success for their students, Teachers in lower class schools have lower expectations for their students.

Differences in school quality could explain some of the school SES findings. That is, middle class schools could contribute to the better performance of disadvantaged students because of superior facilities or staff. However, Coleman found a strong independent school SES effect (stronger than school quality effects). Re-analyses of the Coleman data show varying relative importance in school SES and school quality factors but still support the original finding that school SES is an important educational variable. Studies using other sources of data provide contradictory evidence on the educational importance of different school quality factors, providing educational policy makers with little assistance in the allocation of educational resources. Few studies provide data on both desegregation and school quality although some desegregation studies report observations that segregated and desegregated schools being studied appear to be equivalent. In many smaller studies, the possibility of school

*Smith does not document the extent to which junior and senior high school students are selected to attend schools on the basis of achievement test scores and consequently things correlated with achievement.

quality differences explaining part or even all of a desegregation effect exists. However, the practical relevance of this argument for students receiving a better education under desegregation may be nil. Furthermore, this argument is frequently turned around by desegregation advocates (and sometimes courts) as an additional argument in favor of desegregation.

Studies have attempted to examine the question of independent effects of school and classroom racial composition in addition to the school SES effect. That is, if a disadvantaged black student attends a middle class school, is he more likely to achieve higher if his school or his classroom are predominantly white? Results here are contradictory, at least in part because of technical statistical problems created by the high correlation between school social class and school percent white students. Coleman found no additional desegregation effect while some of the reanalyses of the Coleman data have found such effects. Wilson found in his California study "that racial composition of the school, while tending to favor Negro students in racially integrated schools, does not have a substantial effect--not nearly as strong as the social class composition of the school." The St. John and Smith study referred to earlier found independent arithmetic achievement gains through desegregation after individual SES, neighborhood SES, and sex controls had been introduced, although reading achievement gains were not found. Given that most middle class schools attended by blacks are desegregated, the presence of a desegregation effect in addition to a school SES effect is of relatively small practical consequence.

Because school social class and racial composition are so highly correlated, studies lacking the former but having the latter data are useful if reliable individual family background data are also utilized. Family background data are important because achievement has repeatedly been shown to be very highly associated with family background, especially for blacks. Studies containing individual SES and racial composition data are:

(1) New Haven, Connecticut (Nancy St. John, 1964)

A study in New Haven showed that with individual SES controlled, eleventh grade blacks who had attended more desegregated elementary schools tended to have higher school achievement test scores (although the differences were not statistically significant).

(2) Robert L. Crain (1971)

Data from a random sample of 1,651 black adults living in northern metropolitan areas showed higher average verbal test scores for blacks that had attended desegregated elementary schools or high schools. These relationships were maintained when controls for sex and four indvidual SES variables (father's education, mother's education, number of siblings, stability of parental family) were introduced. A quality of education index added as a control did not explain the difference between the

results for adults that had segregated vs. desegregated schooling. The quality index "accounts for none of the difference in the verbal test score."

(3) Denver, Colorado (Massarotti, 1969)

A study of elementary school students compared transported pupils, pupils in receiving schools, and pupils in the sending schools (i.e., the schools the transported pupils had attended). After extensive matching including race-ethnicity and family SES (measured by occupation of family's chief wage earner) and statistical adjustments for most recent IQ score and previous year achievement test score, no significant differences in achievement were found between the comparison groups. However, statistical problems caused by the high correlation between recent IQ score, pretest achievement score, and achievement score one year later could have obscurred desegregation effects.

(4) Gulfport, Mississippi (Goolsby and Frary, 1969)

A study of an experimental education program involving 200 disadvantaged first graders also analyzed differences between black pupils in segregated and desegregated schools. After controlling for father's occupation and student's mental age, the desegregated blacks had significantly higher achievement scores than the segregated blacks.

A large number of additional studies have been conducted which are not reported here because of technically inadequate designs or other problems. Although some studies are not reported here because they are too old (pre-1960), the most common reasons for elimination are: small sample size, no or inadequate control on individual SES, use of IQ and/or pretest controls in a way that distorts findings, self-selection, longitudinal studies with high losses of desegregated and/or segregated students, and experimental studies with non-equivalent experimental (desegregated) and control (segregated) groups.

The reliance of many studies--including some reported here--on reading achievement test scores probably underestimates desegregation effects. Coleman and others have shown that reading achievement test scores are not as sensitive to school variables as other test scores. Success in reading is more influenced by non-school factors than is success in other areas of academic achievement.

Before-After Desegregation Studies

Some studies without individual SES controls may still be useful because they contain achievement data before and after desegregation and follow large

groups or cohorts or a smaller sample of individual students for substantial periods of time. The major methodological problem with these studies is the lack of knowledge about possible changes during the time period in the average social class level of the minority students in the schools. If the family SES level is going down (through in-migration of poorer blacks or movement of more advantaged blacks to the suburbs), achievement gains over time will not be shown in this type of analysis.

Berkeley, California **took voluntary steps from 1968-69 to reduce racial isolation in its school system.** Achievement test scores for blacks in the elementary grades began to show improvement in 1970 and 1971. These data show that blacks are still below the norm (and below Berkeley whites, who have been above the national norms and are now doing about the same or slightly better than before desegregation) but the normally observed increasing gap in black achievement as blacks advance to higher grades is being reduced. (For example, in 1967, second grade blacks were 0.6 grade levels behind the test norm compared with 0.4 in 1970; 1967 third grade blacks were 1.0 grade levels behind the test norm compared with 0.7 grade levels in 1971.) The achievement of black students at the middle grades in Berkeley is improving but not as much as in the lower grades. Black achievement at the upper grades is low but the testing program in those grades is new and it is impossible to determine whether the current results represent any change. The favorable results for younger children are frequently found in desegregation studies and suggest the importance of desegregation at an early age.

The Berkeley desegregation findings are complicated by the introduction of numerous programs aimed at improving educational quality during the 1967-1971 period. On the other hand, the exceptionally high performance of white students in the Berkeley schools may constitute an unusually severe psychological threat to blacks. Whites in the lowest quartile in Berkeley achieve at the national norm for the standardized test.

In sourthern California, a similar study is being conducted in Riverside. Desegregation was initiated in 1965 and substantially completed in Fall 1967. Achievement test data were collected each May from 1965 through 1970. Research in the first three years of desegregation in Riverside showed no change in minority achievement. Other analyses in Riverside suggest that the achievement gap between desegregated minority (black and chicano) students and the majority group students has remained about constant, representing an improvement over the usually observed increasing gap between minority and majority students over time. All Riverside studies show that majority group achievement has not had any decline since desegregation. The Riverside longitudinal analyses are difficult to interpret with great confidence because of extreme changes in the types and forms of achievement tests administered during the time period studied as well as loss of sample problems.

A recently completed study of Evanston, Illinois collected baseline and concurrent achievement data from fall 1967 through fall 1970. Black students showed consistent improvement in mathematics achievement in the primary grades. Other achievement subtests showed no consistent gains or losses for blacks. White achievement remained at the same level during this period. A separate substudy consisting of a matched longitudinal analysis showed that traveling to school by bus had no adverse effect on blacks or whites. Although the effect was not strong, blacks bused from formerly segregated schools showed greater achievement gains than their former black classmates who were walking to their new desegregated schools.

Summary of Findings

The high quality research evidence reviewed here suggests that black achievement tends to be improved by attending desegregated or middle class schools. Gains through desegregation are not always found but losses are **not** found. Gains sometimes result in reducing the usual increased black-white achievement gap as both groups advance through the schools. At the same time, evidence of gains combined with the absence of alternative educational strategies with demonstrated superior effectiveness, suggests the high educational importance for desegregation in improving black academic achievement. There is no evidence that desegregation reduces white achievement as long as a half or more white situation exists.

Successfully Implementing Desegregation

What happens as school districts, schools, and classrooms desegregate? One encouraging piece of evidence comes from a massive study of 252 randomly selected southern school districts conducted for the Office of Education by the Resource Management Corporation in 1971 when a great deal of desegregation was occurring or had recently occurred in the South. Over 9,000 interviews were conducted with school district officials, principals, teachers and students in fourteen southern States. The study found that the racial climate in the schools had significantly improved as the 1970-71 school year progressed. Respondents reported positive changes in numerous areas of the school racial climate much more frequently than they reported negative changes. Furthermore, positive changes were more frequently reported by respondents who retrospectively reported the most negative expectations at the start of the school year. In short, racial climate improvement appears to have occurred where it was most needed.

Knowledge about the effectiveness of different policies and practices in implementing desegregation is limited. Clearly, despite what overall favorable trends may exist, the process in which desegregation is implemented in the nation, state, school district, and school must have a

crucial impact on its success or failure in the classroom. While knowledge of general trends is vital, the implementation of effective desegregation by officials at all levels and by students and parents is a critical policy issue. It is naive to expect automatic achievement gains through desegregation quickly and under all circumstances.

The effectiveness of implementing desegregation in a manner that provides both a middle class student body and a racial composition of at least 50 percent white has been emphasized in the Coleman data.

Psychologist Irwin Katz has developed from his research a four-factor model which is useful in explaining black performance in biracial situations. On the negative side, Katz lists:

(1) Lowered probability of success

> Where there is a marked discrepancy in the educational standards of black and white schools, or where black children have already acquired strong feelings of inferiority, they are likely to have a low expectancy of academic success when introduced into interracial classes. This expectancy is often realistic, but it has the effect of lowering achievement motivation. The policy implication of this factor is to reduce its impact by beginning interracial instruction in the earliest grades. This is consistent with the findings of the Coleman report and its reanalysis by the U.S. Commission on Civil Rights. Several of the studies discussed in this paper also find more encouraging academic progress for desegregated blacks at lower grade levels. On the other hand, the impact of desegregation upon low ability blacks may not necessarily be negative. Seeing whites in their classroom make mistakes can dispel feelings of black inferiority which our society has imposed on blacks.

The factor of lowered probability of success is also used by some experts to explain the need for non-threatening compensatory education activities for lower achieving blacks within desegregated schools. The need to devise such programs to prevent the full-time isolation of black children within biracial schools is frequently cited.

A related factor of control over one's environment or destiny (also called "fate control") is important. Fate control is measured, for example, by disagreeing with the statement, "Everytime I try to get ahead, something or somebody stops me." Coleman found that blacks with higher levels of fate control achieved much higher than blacks without this perception (independent of family SES, school SES and other factors). Furthermore, blacks in desegregated schools were found to have higher levels of fate control than segregated blacks.

(2) Social threat

Any biracial situation for blacks poses potential social threats because of the prestige and dominance of whites in American society. Rejection of black students by white classmates and teachers can solicit emotional responses detrimental to achievement. This result is consistent with the Commission on Civil Rights finding that black academic achievement is highest in integrated schools featuring low levels of racial tension and high levels of cross-racial acceptance. The social threat factor is the heart of the argument for the need for integrated rather than simply desegregated schools. Symbols of resistance to desegregation such as the discriminatory firing of black teachers and administrators, discrimination in extracurricular activities, segregated classrooms (or segregation of races in different sides of the same classroom), and similar symbolic acts and practices can be expected to be detrimental to black performance but there has thus far been no empirical test of this hypothesis.

(3) Failure threat

Failure threat arises when academic failure results in disapproval by significant others: parents, teachers, or peers. The role of teacher expectations can be crucial in this area. Eugene Johnson constructed a scale of teacher expectations in 145 Riverside classrooms. He compared teacher ratings of the ability levels of her minority and white pupils with the pre-desegregation achievement test scores of those minority and white pupils. A scale was constructed in which teachers who accurately perceive the ability of their minority pupils (high expectancy) are compared with teachers who either underestimate the ability of their minority pupils or overestimate the ability of their white pupils (low expectancy). Children with low and high expectancy teachers did not differ significantly on pre-desegregation achievement. In high expectancy classrooms all race and ethnic groups showed little achievement change from pre-desegregation levels, but in low expectancy classrooms blacks showed significant decreases in achievement while whites showed slight increases. Furthermore, minority children achieving the highest before desegregation were the most adversely affected by teachers with low expectancies. The situation for minority pupils is further exacerbated by the fact that they seem more sensitive than whites to the interpersonal behavior of their teachers (Nancy St. John, 1971).

> The RMC study referred to above found that teacher training activities funded under the Emergency School Assistance Program were ineffective. School racial climate measures showed more improvement in schools that did not have ESAP teacher training than in schools that did. Whether teacher training produced lowered expectations for black students is impossible to determine from the data. But, whatever the reason, teacher training as currently practiced does not seem to be effective in improving school racial climate in the majority of cases.

The positive side of the Katz model is that acceptance of blacks by white classmates and teachers often has a:

(4) Social facilitation effect

> Acceptance, Katz observes, has a social facilitation effect on blacks' ability to learn. The anticipation that skillful performance will win white approval rather than rejection endows scholastic success with high incentive value with the absence of severe social threat.

The findings by RMC of the improvements in the school racial climate during the 1970-71 school year in the South are especially encouraging from the view of this model. Although the effect of racial climate on black academic achievement has not been sufficiently researched, positive effects on achievement (such as those referred to above as found by the Commission on Civil Rights) should be found. Research currently being undertaken by the Office of Education is being directed at this area.

The impressions of some of the Riverside researchers over a period of years in observing desegregation evolve are instructive. Noting that some Riverside schools have been more effective than others over the years in producing achievement gains, they note that two of the desegregated Riverside schools with the greatest improvement in minority achievement have: (1) extensive parent involvement including working in the schools as aides and in other positions, but also involvement in real decision-making in school planning and programming as members of an active advisory group, and (2) teachers working with the principal and parents on curriculum but also encouraged to use these inputs creatively and individually. The educational programs and curricula of these two successful schools differ considerably; it may well be the process that is the crucial factor. The number of teacher aides hired may matter for less than how they are utilized and involved. The curriculum developed may matter

> far less than the climate in which it (or, rather, they) are conceived. Processes like these may be the long-term key to "social faciliation" and successful education.

Detailed generalizable research evidence on successful activities that schools can undertake to improve minority student achievement in desegregated settings is virtually non-existent. The RMC report found counseling, counseling support, student-to-student, and remedial programs effective in improving school racial climate. As presented above, this could also lead in a causal chain to improved academic achievement but this cannot be tested with the RMC data. However, a current Office of Education evaluation will explore these questions in depth.

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